

DEPARTMENT OF THE INTERIOR  
BUREAU OF EDUCATION

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# AMERICAN AGRICULTURAL COLLEGES

A STUDY OF THEIR ORGANIZATION AND  
THEIR REQUIREMENTS FOR ADMISSION  
AND GRADUATION

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## LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,  
BUREAU OF EDUCATION,

*Washington, D. C., June 28, 1918.*

SIR: By what has come to be known as the first Morrill act (July 2, 1862), the Congress of the United States appropriated to the several States for the establishment and maintenance of colleges of agriculture and mechanic arts public lands from the proceeds of which they now receive a total annual income of approximately \$900,000. Through later acts of Congress (1890 and 1907) the Federal Government appropriates for the further support of these institutions the sum of \$2,500,000 annually. The institutions receiving aid from these appropriations are more closely allied and have more common interests than any other group of colleges in the United States and have come to be looked upon as in some measure a national system of higher education. To assist the responsible officers of these institutions in their task of constant readjustment of organization and management on the basis of changing conditions and needs, and to give to officers of secondary schools and to the general public information about the requirements of these colleges for admission and graduation, I recommend that the manuscript transmitted herewith be published as a bulletin of the Bureau of Education. The manuscript is the result of a study made at my request by Dr. Chester D. Jarvis, the bureau's specialist in agricultural education.

Respectfully submitted.

P. P. CLAXTON,  
*Commissioner.*

THE SECRETARY OF THE INTERIOR.

## INTRODUCTION.<sup>1</sup>

The present pamphlet has been prepared for the special use of persons charged with the administration of agricultural colleges. Inasmuch as it shows in tabulated form the practice of the various colleges concerning the distribution of required subjects, committees on "courses of study" should find it useful in planning curricula. Principals of secondary schools, also, should find in this bulletin much information that may aid them in advising their students with regard to the curricula offered by the various colleges.

The bulletin comprises three parts. Part I comprises general discussions and tabulations concerning the government and organization, and the agricultural curricula offered by each institution. Part II pertains to the requirements for admission, and Part III to the requirements for graduation. In the appendix, page 97, will be found tabulated outlines showing the scope and credit value of the graduation requirements for the several institutions. Where the method for awarding credit differs from that adopted here as a basis for comparison, the adjusted credit value of the work is shown along with the institution's credit value. Summary deductions will be found on pages 16, 31, and 59.

The tabulations presented are based upon individual statements concerning the several institutions. These statements were prepared from information contained in the latest college catalogues on file (usually those announcing courses for 1917-18), from Government reports, and from information obtained by direct correspondence. The statements were sent to the respective institutions for verification. In all but four cases the statements were verified and returned. In the cases of the four colleges failing to return the statements they were assumed to be correct. In a few cases catalogues have been received after the completion of the manuscript, but since alterations in the individual statements at that time would have necessitated the remaking of the tables, no attempt has been made to alter the records in harmony with the later catalogues. In most cases, however, the statements were modified by the college officers to harmonize with forthcoming catalogues.

<sup>1</sup> Any disagreement from present practices found in this document may be accounted for in the delay in publication incident to the priority demands of emergency matters. The manuscript was presented for publication in December, 1917.

The investigation embraces all of the land-grant colleges (act of 1862), offering courses in agriculture, except those for the colored race. In the latter the conditions are so different that there would be little gained from bringing them into comparison with the other colleges. As a class of public institutions, however, they offer a splendid opportunity for a similar study.

A study similar to the present one was undertaken a few years ago by Prof. F. B. Jenks,<sup>1</sup> while employed by the Bureau of Education. The data collected at that time have been placed at the writer's disposal and have proved extremely valuable, especially from an historic standpoint.

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<sup>1</sup> A preliminary report of Prof. Jenks's study was presented at the Atlanta meeting of the Association of American Agricultural Colleges and Experiment Stations and forms a part of the report of proceedings for the year 1912.

## AMERICAN AGRICULTURAL COLLEGES.

### A STUDY OF THEIR ORGANIZATION AND THEIR REQUIREMENTS FOR ADMISSION AND GRADUATION.

#### PART I.—ORGANIZATION OF LAND-GRANT COLLEGES.

##### GOVERNING BOARDS.

There appears to be great diversity in the form and character of the governing bodies of the several institutions under discussion, but when compared with that of the generally endowed institutions, they show a remarkable uniformity. The greatest variation is found in the name, which is of little consequence, and in the number of members.

*Name of governing boards.*—Reference to Table 1 shows that in 23 institutions the governing body is known as the "board of trustees"; in 12 institutions it is designated as the "board of regents"; in 4 it is the "State board of education"; in 3 the "State board of agriculture"; and in each of the remaining 8 institutions a distinct designation is in use. In all, 12 different names are applied to the governing bodies of the land-grant colleges.

*Size of governing boards.*—The number of members on the several boards varies from 4, which constitutes the Kansas State Agricultural College board, to 41, which comprises Rutgers College board. The median<sup>1</sup> number of members is 10. Eight institutions have boards of 5; two, boards of 6; four, boards of 7; two, boards of 8; seven, boards of 9; four, boards of 10; three, boards of 11; two, boards of 12; five, boards of 13; two, boards of 15; and the remaining ten have boards of 17, 18, 18, 20, 23, 31, 32, 32, 40, and 41 members, respectively.

*Ex officio members of governing boards.*—Thirty-three institutions have ex officio members on their boards. The number of ex officio members varies from 1 to 11, the median number being 2. Seventeen institutions have no ex officio members on their boards; 7 have 1; 12 have 2; 6 have 3; 5 have 4; and the remaining 3 have 7, 8, and 11, respectively.

<sup>1</sup> The "median" number is the middle number in a series arranged in order of magnitude.



In 24 instances the governor of the State is an ex officio member. In 25 cases the superintendent of public instruction, or a similar official with a different title, is an ex officio member. In 13 cases the president of the college or university is an ex officio member. A great many other State officials, such as the lieutenant governor, the chief justice, the attorney general, the secretary of state, the State treasurer, and the speaker of the assembly, are occasionally ex officio members. In many cases, the State board of agriculture and the State grange are represented by an ex officio member.

In several cases certain ex officio members are denied the voting privilege. This more frequently applies to the president of the institution, but sometimes includes the governor and other officials. Information is incomplete with regard to this point, but such cases as are known to exist are indicated in the table.

*Method of appointing board members.*—In 44 cases the governor, by constitutional authority, appoints all or a portion of the members. Although not always indicated, such appointments are frequently subject to the approval of the State senate. Where this is known to be the case, it is indicated in the table. In six institutions, one or more members are elected by the alumni. In some cases, the members nominated by the alumni must be confirmed by the governor. The members of the board of the University of Vermont are chosen by the State legislature. In four institutions, all or part of the members are chosen by the board itself. For four institutions, Illinois, Michigan (Agricultural College), Nebraska, and Nevada, the members of the board are elected by the people. In Oklahoma Agricultural and Mechanical College, also, the president of the board, who is a salaried officer, is elected by the people. With few exceptions, as shown in the table, the board members of the several institutions are chosen by one of the above methods.

*Term of office of board members.*—In general, there is considerable uniformity with regard to the term for which members are appointed. In 2 institutions, 3 years is the term; in 12 institutions, 4 years; in 4 institutions, 5 years; in 18 institutions, 6 years; in 3 institutions, 7 years; in 2 institutions, 8 years; in 2 institutions, 9 years; in 2 institutions, 12 years; in 1 institution, 16 years; and in 4 institutions, the members are chosen for life or indeterminate terms. In some institutions, some of the members are appointed for shorter or longer periods, the periods here refer to the majority members. The median term of office is six years.

*Political restrictions.*—In eight States the law requires that the governing board of the State university or college shall be bipartisan and in six of these cases the number of members that may be appointed from any one political party is designated. Cornell University re-

quires that a majority of the members shall not belong to any one religious sect or of no sect. Wisconsin law requires that two members of the board shall be women. In 37 States there are no political restrictions regarding the appointment of members for governing boards.

#### CENTRALIZED CONTROL.

The State university has come to be regarded as a part of the educational system of the Commonwealth. In States where there is but one tax-supported institution of higher learning, the problem of administrative control is a simple one. In many States, however, such a happy state of affairs does not exist. The following statement shows in a general way how the several States have organized their higher education:

(1) States having all higher education consolidated in a single university, comprehending all departments provided in the State, with centralized administration and under a single board of control: Arizona, Arkansas, California, Idaho, Illinois, Kentucky, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, Tennessee, Vermont, West Virginia, Wisconsin, Wyoming.

(2) States having a single college (commonly a land-grant college for agriculture and the mechanic arts) and not providing other forms of higher education in a State institution: Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, Pennsylvania.

(3) States having two State institutions (unless otherwise indicated a State university and a land-grant college for agriculture and the mechanic arts): Alabama, Florida (State University, State College for Women), Indiana (Indiana University, Purdue University), Kansas, Michigan, North Carolina, North Dakota, Oregon, Utah, Washington.

(4) States having three or more State institutions: Colorado, Georgia, Iowa, Mississippi, Montana, Ohio, Oklahoma, South Carolina, South Dakota, Texas, Virginia.

Thus it appears that 25 States provide in one institution whatever higher education is afforded; 10 States maintain two separate institutions, and 13 States maintain three or more higher institutions. Eight of the States maintaining two or more institutions, Florida, Georgia,<sup>2</sup> Iowa, Kansas, Mississippi, Montana, North Dakota, and South Dakota have consolidated higher education under a centralized board of control.

<sup>2</sup> A number of States partially support higher education in one or more institutions over which they have no control. Such institutions are not regarded here as State institutions.

<sup>3</sup> The University of Georgia comprises several quite independent units, each with a distinct board, but all are subordinate to the university board.



## INTERNAL ORGANIZATION AND ADMINISTRATIVE RELATIONSHIPS.

During recent years the rapid development of the agricultural colleges, especially with regard to extension activities, has brought new problems and a renewed interest in organization and administration. With greater diversity of interest and with ever-increasing appropriations, calling for larger working staffs, has come a greater need for careful organization and a clearer understanding of administrative relationships.

In the broader aspects, the administrative organization of the several institutions is very similar. While some of the institutions are designated "universities" and others as "colleges," the type of organization of the latter in most cases closely resembles that of the former. In other words, the institutions with the more modest designation usually are made up of two or more major divisions, each with its dean and fairly distinct faculty. In the agricultural colleges of seven States—Connecticut, Georgia, Hawaii, North Carolina, Rhode Island, South Dakota, and Washington—no division of faculty is apparent. In these colleges, however, the agricultural work is administered through the usual administrative divisions—instructional, research, and extension; and in such colleges these are regarded in this discussion as major divisions. Of the 50 institutions, two embrace 13 major divisions, three embrace 12, three embrace 11, one embraces 10, three embrace 9, six embrace 8, five embrace 7, eight embrace 6, and 19 embrace less than 6 major divisions.

In 37 institutions, the agricultural work is administered through three coordinate administrative divisions—resident instruction, research, and extension. The list includes all of the agricultural colleges except those of Georgia, Hawaii, California, Maine, Illinois, Missouri, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Porto Rico, and Tennessee. In four of these—California, Illinois, Missouri, and New York—the work is integrally administered through the heads of the various subject-matter departments. Assuming that the chief executive officer, the dean, in each of these cases, performs the functions of four offices, the organization is quite similar to that in which the work is administered through the three divisions. In the colleges of Georgia, Maine, New Jersey, Ohio, and Pennsylvania, the extension service constitutes a department, coordinate with subject-matter departments. In Georgia, Hawaii, Ohio, and Porto Rico the experiment station is distinct from the college of agriculture. The Universities of Nebraska and Tennessee recognize the three administrative divisions, but not as coordinate.

Thirty-three of the institutions have adopted the plan of holding extension specialists responsible to the subject-matter departments for the correctness of their teaching. In the remaining colleges,

including those of Arizona, Arkansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Nevada, North Dakota, Rhode Island, South Dakota, Tennessee, Texas, Washington, and Wyoming, the extension specialists are regarded as independent of the subject-matter departments. In most of these cases, however, the specialists are required to conform their teaching to that of the respective departments.

Unlike other institutions of higher learning, the agricultural colleges are called upon to administer three lines of service approximately equal in importance—resident instruction, agricultural extension, and agricultural research. Considerable confusion has resulted from attempts to administer these three kinds of service through the traditional form of organization. As a result of the necessity for promoting agriculture along these three lines and on account of constantly increasing appropriations, large groups of specialists have been engaged to work on each of the recognized agricultural subjects. In the process of development, the department, rather than the individual, has become the unit of organization. This condition has resulted in the development of large departments, which sometimes have been administered more or less autocratically, with a consequent loss of initiative on the part of the individual. In some cases, also, it has resulted in administrative conflict between the department head and the director in charge of the kind of service concerned.

With a view to obtaining a better understanding of administrative relationships in the agricultural college, the committee on college organization and policy of the Association of American Agricultural Colleges and Experiment Stations asked the United States Bureau of Education to make a study of the agricultural college organization. A complete report of the findings, with a tentative set of recommendations, was made to the committee in November, 1916. One year later, at the time of their meeting in Washington, the committee after some discussion and amendment, embodied the recommendations in their report, which was accepted by the association.<sup>1</sup>

#### AGRICULTURAL CURRICULA, DEGREES, AND CERTIFICATES.

##### GRADUATE WORK.

Forty-four institutions offer opportunity for graduate instruction in agriculture. The six agricultural colleges that do not offer such work are those of Arkansas, Colorado, Connecticut, Porto Rico, South Carolina, and Utah. Thirty-four offer only a master's degree and 10 offer a doctor's degree. The land-grant institutions

<sup>1</sup>These recommendations are elaborated in Higher Education Circular No. 8 of the United States Bureau of Education.

offering doctor's degrees for work in agriculture are those of California, Illinois, Massachusetts, Minnesota, Missouri, Nebraska, New Jersey, New York, Ohio, and Wisconsin.

There is a remarkable uniformity in the use of degree titles. In all cases the doctor's degree is designated as Ph. D. The Massachusetts Agricultural College offers in addition the degree D. Agr., the requirements for which are similar to those for the Ph. D. except that an accepted amount of successful professional experience is necessary. The master's degree in 28 cases is designated as M. S. In 6 cases it is designated M. S. A. and in 6 other cases as M. S. Agr. Rutgers College uses the designation M. Sc. Massachusetts Agricultural College offers in addition the professional degree M. Ar., Michigan Agricultural College offers several professional degrees, such as M. Agr., M. Hort., M. For., and M. V. S. The University of Missouri offers the same advanced degrees, A. M. and Ph. D. in agriculture as in other branches. It also offers an M. F. (master of forestry) degree. Cornell offers an M. L. D. (master of landscape design) degree. (See Table 2.)

#### FOUR-YEAR CURRICULA.

As shown in Table 2, all the colleges offer four-year curricula leading to the bachelor's degree. In 40 cases the simple title B. S. is used. In 4 cases the designation is B. S. A., and in 5 cases it is B. S. Agr. Georgia State College and the University of Missouri offer degrees with a distinct designation, B. S. For., for graduation in forestry. In Iowa State College, the degree indicates the subject of specialization, such as B. S. in A. E., B. S. in A. H., B. S. in Hort. for specialization in agricultural education, animal husbandry, and horticulture, respectively.

*Major options and opportunities for specialization.*—In Table 3 an effort has been made to show the opportunities for specialization offered by the several colleges. An average of eight opportunities for specialization are offered by the colleges. In many cases, especially in the large universities, opportunity for specialization is even greater than is indicated by the table. In most cases a definite number of major options are open for election, but in a few of the larger universities, notably California, Illinois, Cornell, Ohio State, and Wisconsin, students may specialize in any department of the college of agriculture, or even in some particular phase of the work of a department. In these cases the common practice is to require students to carry a minimum amount of work in the major subjects and sometimes one or more minor subjects, but in a few cases the selection of courses in the subject of specialization is left to the student and his adviser. In the institutions where the major option plan is in operation, the common practice is to prescribe most of the



work within each option, but in many cases the major option schedules are regarded only as suggesting suitable combinations.

It may be seen from the table that California and Cornell offer 22 and 21 opportunities, respectively, for specialization. Oregon and Massachusetts Agricultural Colleges and Illinois and Wisconsin Universities offer 15 or more opportunities. Nine other institutions offer 10 or more, 23 others offer 5 or more, and the remaining 12 offer less than 5. Animal husbandry, agronomy, horticulture, dairy husbandry, and agricultural education occur most frequently among the major options. Forty-four institutions offer options in animal husbandry, 43 in agronomy, 37 in horticulture, 31 in dairy husbandry, and 25 in agricultural education. A former inquiry revealed the fact that 40 of the colleges provide for specialization in agricultural education, so that 15 of the institutions offer sufficient elective work in connection with other options to enable students to carry the required number of educational courses to qualify for State teachers' certificates.

Although 24 different options are listed in the table, 10 institutions offer options in unlisted subjects. Arkansas offers one in professional agriculture. California offers opportunities for specializing in citriculture, in nutrition, and in viticulture and enology. Kansas State Agricultural College offers an option in the milling industry; Maryland State College one in the canning industry; Massachusetts Agricultural College one in rural sociology; Michigan Agricultural College one in apiculture; University of Minnesota three in different phases of forestry; Cornell one each in meteorology and extension teaching; College of Hawaii one in sugar technology; and the University of Vermont one each in plant industry and animal industry. Among the unusual options listed in the table, attention is called to that of agricultural journalism, offered by Massachusetts Agricultural College and by the University of Wisconsin, and to that of genetics offered by California, Cornell, and Wisconsin.

#### SECONDARY CURRICULA.

Most of the institutions offer three, two, or one year curricula for the benefit of persons who do not care to spend four years at college or who are unable to meet regular entrance requirements. Such curricula usually contain a larger proportion of technical work and a smaller proportion of academic work. In some cases, students in these shorter curricula are given an opportunity of carrying a certain number of courses that may be accepted for regular admission. In most cases, however, work completed in the shorter curricula is not accepted toward satisfying the requirements for graduation in the degree curricula.

These shorter curricula, often designated as "school of agriculture" curricula, extend over one, two, or three years, but each year frequently is of shorter duration than the regular college session. The duration varies from four to nine months.

Reference to Table 2 again will show that 10 colleges offer a three-year curriculum, 24 offer a two-year curriculum, and 6 a one-year curriculum. South Dakota offers a four-year secondary curriculum. In most cases students completing these curricula are given certificates or diplomas with the designation associate. In other institutions, such as Florida and Wisconsin, they are called "graduates" and given such titles as G. F. (graduate in farming) or Grad. Agr.

#### SHORT CURRICULA.

Thirty-eight colleges offer short curricula either in the winter or summer. Some offer several curricula in various subjects and of varying duration. In most cases these are winter curricula covering periods of from 10 days to 5 months. Many institutions hold six-day conferences known usually as "farmers' week." These or other curricula of less than 10 days are not included in the tabulations. In some cases short curricula are offered during the summer months. South Carolina, for instance, offers special work in cotton grading during the month of August. Texas offers six weeks of the same kind of work during June and July.

In most cases a certificate of attendance is given upon the completion of the various short curricula.

#### SUMMER SESSIONS.

Thirty-eight of the colleges offer an opportunity for study for a period of from 4 to 12 weeks during the summer. In most cases regular undergraduate courses are offered, so that matriculated students who take them may receive credit toward graduation. Many institutions offer also special curricula for unmatriculated students. Purdue offers a 12 weeks' session; Kansas State Agricultural College and Louisiana State University offer sessions of 9 weeks; the Universities of Illinois, Missouri, and Nebraska, and the Oklahoma College offer sessions of 8 weeks; North Carolina College of Agriculture and Clemson College offer sessions of 4 weeks; and the remaining 29 offer sessions of 6 weeks.

#### CONCLUSIONS CONCERNING ORGANIZATION.

*Government.*—During recent years, representatives of the Bureau of Education have conducted several educational surveys, including inquiries concerning the institutions of higher learning. This has afforded abundant opportunity for an examination of the efficiency of various types of governing boards. In the report of the survey

of the University of Nevada<sup>1</sup> appears an extended discussion concerning the nature, powers, and duties of governing boards in general. The committee in charge of this survey sets forth the following general principles:

1. Experience has shown that public administrative boards<sup>2</sup> consisting of from 7 to 15 persons have usually been most successful.
2. The governing boards of State universities should have no connection with partisan politics. This condition is best attained if their members are appointed by some official agent representing the whole community, preferably the governor.
3. University regents should be appointed for long terms.
4. The members of such bodies should receive no compensation beyond their necessary traveling expenses.
5. Members of a university board of regents should be representative citizens, persons of enough education to enable them to form competent judgment on questions of university policy, preferably in a majority of cases university graduates; but not educational experts.
6. The scope of the board's activities should be strictly limited, either by law or by board ruling, to the determination of the general policies of the institution or institutions under its control, in consultation with the executive officers; the appropriation of moneys or the approval of the distribution of appropriations made by public appropriating bodies; and the appointment of institutional employees on the recommendation of the institutional executives. In other words, the function of the governing board is, in the broadest sense of the word, legislative.

This statement of principles should be studied in connection with the committee's full discussion, which makes it clear that there may be many efficient governing boards whose form differs from that suggested, and that the recommendations are intended only for those States or institutions contemplating a reorganization of their boards.

*Centralized control.*—As a result of the bureau's investigation of the higher educational systems of several States and in the light of experience and theoretical considerations, two principles for the organization of higher education may be suggested: (a) Whenever possible, all higher education, other than that of the normal schools, should be consolidated in a single State university; (b) whenever two or more higher institutions are established, they should be under common control and should be assigned definite fields to insure appropriate coordination and to prevent wasteful duplication of courses or departments.

<sup>1</sup> U. S. Bureau of Education, Bulletin 14, 1917.

<sup>2</sup> This refers to boards which exercise legislative functions only. Executive boards whose members devote their whole time to the work of administration (such as the Kansas State board of administration) are not taken into account in this statement of principles.



*Internal organization.*—The following set of recommendations was prepared by the Bureau of Education, and after minor changes, as shown by the italicized phrases, was accepted by the Association of American Agricultural Colleges as a part of the report of its committee on college organization and policy for the year 1917:

1. That the individual specialist, *capable of working independently*, should be regarded as the unit of organization.
2. That the group of working specialists on any one of the recognized subjects, regardless of the kind of service, should constitute the subject-matter department.
3. That specialists should devote their time mainly to one kind of service, but provision should be made for exchanges for the mutual advantage of each.
4. That one member of each department should be designated as chairman, or *administrative head*.
5. That the members of the subject-matter department should be given a voice in the designation of their chairman or *administrative head*.
6. That authority for subject matter should be confined to the group of specialists comprising the subject-matter department, and that administrative control should be limited to the amount and method of work.
7. That the distribution of administrative authority should be on the basis of the kind of service.
8. That the three kinds of service, each in charge of a secondary administrative officer, should be coordinated under a chief executive who, in the case of a large institution composed of several faculty groups, should be an officer other than the president.
9. That the official designation "dean" in an agricultural college should be applied only to the chief executive officer who is responsible for the coordination of the three phases of agricultural service; and that of "director" should be applied to the coordinate officers in charge of each of the three lines of service—resident instruction, research, and extension.
10. That when one individual performs the duties of two or more offices his official designation should identify clearly the officer with the respective offices assigned.
11. That the leaders in charge of the various phases of the extension service should be regarded as administrative officers and should not usurp the duties of the specialists in the various subjects. Where an individual serves both as specialist and administrative leader, a dual responsibility should be recognized.
12. That in the promotion of extension projects controlled by either connected or cooperating colleges, the same administrative relations with the subject-matter departments concerned should exist as with departments that are organically connected.
13. That incoming correspondence, except that of an administrative nature, should be referred to the subject-matter departments concerned, and there referred to the individual best qualified to supply the information called for.
14. That specialists, in whatever kind of service, should be on an equal basis from the standpoint of rank and official designation. If differentiation of extension and research specialists is desirable, the prefixes "extension" and "research," respectively, may be used in connection with the customary professorial titles.

## 'PART II.—REQUIREMENTS FOR ADMISSION.'

### METHODS OF ADMISSION.

In each of the 50 institutions applicants are admitted by either examination or certificate. In most cases examinations may be taken either under the immediate direction of the institution or under the direction of certain examining boards. In several cases, however, the institutions do not offer entrance examinations and applicants for admission by examination are required to take the examinations of the college entrance examination board of their respective regions.

Larger proportions of students each year are being admitted by certificate. The lists of approved high schools are constantly becoming larger and the reciprocal relations between college and high school are being gradually improved. In many cases the State colleges and universities are cooperating with the State departments of education with a view to bringing about a practical basis for articulation between secondary and higher education. Such cooperation in some cases consists of inspecting and approving of the various secondary schools with a view to establishing lists of accredited schools. The colleges have profited by this contact with the high schools, and have modified their requirements to meet the popular demand. High schools also have been benefited by the contact with the colleges, and they are fast becoming liberally standardized. Although standards are somewhat variable, an "accredited high school" in most States is one which attains certain prescribed standards of equipment, teaching force, and efficiency, and administers in a satisfactory manner a four-year plan of study in advance of the eighth grade or grammar-school studies, and including usually four years of English, three years of mathematics, three years of history, three or four years of foreign language, and two years of science, and requires for graduation 15 or 16 units of work.

Certificates are accepted generally from not only the high schools that are accredited by the institutions themselves but from high schools that are accredited by State colleges and universities in other

<sup>1</sup> The present discussion of the requirements for admission concerns the requirements for admission to the agricultural curricula only.

States. Students from district or county agricultural schools, from normal schools and from other colleges are admitted generally by certificate.

#### AGE REQUIREMENTS.

In 28 of the institutions there is a definite minimum age limit for admission to freshman standing. In 24 of these the limit is fixed at 16 years; in 2 institutions it is 15 years; in 2 others it is 14 years. In 22 institutions there is no fixed age limit. The minimum age limit for women in 2 institutions is 17 years. In the other institutions the age limit is the same as for men. (See Table 4.)

For admission as special or unclassified students, 25 of the institutions require applicants to be at least 21 years of age; 9 require them to be at least 18 years of age; and the remainder publish no special age restrictions. As a rule this age limit applies to applicants who are unable to meet entrance requirements, but in many cases applies to all applicants to special classification.

For applicants for admission to the short curricula, the same age restrictions generally are applied as for regular freshman classification, but sometimes the age limit is slightly in advance.

#### OCCUPATIONAL EXPERIENCE REQUIREMENTS.

In none of the institutions is farm experience a rigid requirement for admission. In the University of Missouri, New York State College of Agriculture, and Clemson College, one year's farm experience is listed as a requirement, but in each case opportunity is provided for the making up after entering of any deficiency in this respect. In 18 institutions farm experience in varying amounts is required sometime before graduation. In most of these cases students are strongly advised to obtain such experience before entering. Deficiency in this requirement is usually made up either on the college farm or on an approved farm away from the college. Many of the institutions, although not requiring farm experience either for admission or graduation, strongly advise applicants for admission to obtain at least one year's experience on a farm before entering.

There is a growing tendency to increase farm experience requirements. The recent ruling of the Ohio State University expresses the changing attitude of many of the stronger colleges, especially those of the North:

As a prerequisite for graduation in all the courses in the college of agriculture, excepting home economics, students graduating in June, 1919, must have had one summer of farm experience; those graduating in 1920, two summers of farm experience; 1921, three summers of farm experience; and 1923, one full year of farm experience. This requirement shall be interpreted as meaning actual work done in residence on the farm. The one year requirement, when effective, must be met before the student is permitted to register for his junior year.



In some of the institutions, especially in the East, at least half of the students in agriculture have matriculated without having had any experience on a farm. In one institution the proportion runs as high as 65 per cent. The students in many cases come from large cities, and they are not only deficient in a knowledge of farm operations, but they are completely ignorant of country life conditions. The practice of turning out graduates with no more practical experience than is obtained at odd times on a college farm, or even that obtained during summer vacations, is beginning to have a detrimental effect upon the institutions and, for this reason, the colleges are emphasizing more and more the necessity for a fair amount of occupational experience before entering college.

The need for strengthening and enforcing the requirements pertaining to practical experience is becoming more urgent since the colleges are expected to train teachers of agriculture for the secondary schools. The impractical character of the agricultural instruction in the high schools has been the cause of the disappointment so frequently experienced by well-meaning school boards in progressive communities. Many of the agricultural graduates who have not had farm experience and who have lacked the ability and opportunity to follow the farming occupation have obtained positions as teachers. Such positions, on account of insufficient compensation, have failed to attract the men with experience in farming.

There is no doubt that the colleges are convinced of the desirability of enforcing the requirement for previous farm experience, but there is a belief on the part of many that such a ruling would cause many prospective students, who are deficient in this respect, to turn to other institutions where there are no such restrictions. The remedy, therefore, calls for either unanimous action on the part of the colleges concerning the practical experience requirements, or a more efficient method for providing the necessary practice in farm operations and the closer contact with the affairs of country people.

#### SCHOLASTIC REQUIREMENTS.

*The unit system for college entrance.*—The proper adjustment between college and high school is one of the important contemporary problems in education. Great improvements have been made during recent years, and there are indications that the next few years will mark even greater advances toward a more complete college and secondary school articulation. The fear on the part of many colleges that a greater liberality concerning entrance requirements may be looked upon as a lowering of standards seems to be a retarding factor in the movement. A thorough understanding of present conditions should serve as a foundation upon which certain classes of institutions may establish common standards and thus eliminate undesirable competition.

The introduction of the unit system has had a marked influence upon improved relationships between college and high school. The system, of course, has been abused in some instances. Some high schools are endeavoring to maintain an 18-unit standard and some colleges are endeavoring to maintain a 16-unit entrance requirement. Most institutions, however, both colleges and high schools, appreciate the danger in multiplying units for entrance at the expense of thoroughness of preparation. The unit system is based upon the principle that there is a given time at the disposal of high school students and that 16 units represents the maximum amount of work that they may be expected to accomplish satisfactorily during that time. It may be assumed also that a student who confines his attention to a few subjects during his limited school career is better prepared, either for self-support or for college, than one who during the same period has studied many subjects. The time applied to study, rather than the number of courses carried, is a better measure of a student's preparation and his fitness to enter college.

It is apparent from the present study that the great need concerning high school and collegiate articulation is for a better understanding of what constitutes adequate training for the bachelor's degree. The requirements for the eight-year period, represented by the high school and collegiate courses, should be considered as a unit. Some progress already has been made in this direction. The University of California, for example, has unified the high school and junior college work, which serves the purpose well. Each State, it would seem, should provide a statement showing what are believed to be suitable sequences for each line of specialization offered by its higher institutions. Such a statement should be of service to high-school officers in arranging appropriate schedules, and should enable students to determine definitely the ground that they must cover before graduation from college. It should tend also to eliminate the necessity for admitting to college such large numbers of "conditioned" students as are now admitted. This subject is more fully discussed in the following section (see p. 59).

Catalogue standards for admission, of course, are oftentimes quite different from those actually enforced. There are probably none of the State institutions whose paper standards are so meaningless as to admit deficient students without "conditions," but there are many colleges requiring theoretically 14 units for entrance that make a practice of admitting students conditionally who are deficient in two or more units. Since many of the conditioned students are bonafide graduates of high schools, either a relaxa-

tion in the amount of prescribed work or a liberalizing of the range of optional subjects would result in fewer conditioned students and consequently in less time being spent in making up entrance work, which may be of less value to the student than some regular college courses.

NUMBER OF UNITS REQUIRED FOR ADMISSION.

As may be seen from Table 4 all of the colleges, except three, require for regular admission a minimum of 14 units, which is regarded as the minimum number required by standard colleges. Included among these is the Connecticut Agricultural College which does not admit students on the unit basis, but requires four years of high-school work. By deducting from the total requirement the number of conditional units approved by the several colleges, the result is quite different. In a few cases students deficient in prescribed work only are admitted conditionally, but in many cases students who are from one to three units short in total requirements are so admitted. Most colleges publish statements showing the maximum number of units for which applicants may be conditioned. Others simply state that deficient students may be admitted conditionally. Assuming that the latter approve of one unit deficiency, the following statement shows the number of institutions in the various classes, based upon the number of units required for admission, both before and after deducting the number of deficient units approved:

*Distribution of the colleges according to their gross and net requirements for admission.*

Entrance units.	Number of institutions.	
	Before deducting deficient units approved.	After deducting deficient units approved.
16	2	1
15	30	9
14½	2	1
14	12	15
13	0	10
12	2	11
12½	0	7
11	1	1

During the past five years, as shown in Table 5, there has been a conspicuous increase in the number of colleges requiring 14 units for entrance. For the year 1912-13, only 34 of the 50 institutions required a minimum of 14 units for entrance, while at the present time, as shown above, 47 claim to be on this basis. As a result of



this, the median requirement for entrance has been raised from 14 in 1912-13 to 15 in 1917-18. This increase in requirements has been made possible to some extent by substituting vocational subjects for certain academic subjects, which seems to indicate a general liberalizing of the college entrance requirements.

#### PREScribed SUBJECTS.

The subjects that are prescribed for entrance by the several colleges are shown in Table 4. In general, the number of subjects that are prescribed for college entrance is decreasing, and the number for which entrance credit may be granted is increasing. Table 5 shows, among other things, a comparison of the number of prescribed units for the years 1912-13 and 1917-18. The median number of prescribed units for the former year is one-half unit higher than that for the latter. By eliminating the institutions requiring less than 14 entrance units there is a difference of one unit, the median number of prescribed units in 1912-13 being nine and in 1917-18 eight.

Only five subjects are found in the list of those that are designated as prescribed. These are English, foreign language, social science, mathematics, and natural science. One institution, Clemson College, prescribes agriculture, but this is listed in the table under science.

Of the 48 institutions<sup>1</sup> all prescribe *English*. The amount of preparation in this subject varies from one to four units, but 42 colleges have a fixed three-unit requirement. The University of Minnesota and New Mexico College of Agriculture require four units, but in the former case four units of foreign language may be substituted for the fourth unit of English. The universities of California, Ohio, and Wisconsin require but two units of English, and Mississippi Agricultural and Mechanical College requires two and one-half units.

Only 18 institutions prescribe *foreign language* for entrance, and, with two exceptions, all require but two units in this subject. The agricultural colleges of New York and North Dakota require three units. Two other institutions, University of Florida and Maryland State College, list foreign language as a required subject, but provide for substitutions. Many of the institutions requiring this subject stipulate that not less than two units may be offered in a single language. Some accept a third unit in a second language. In this connection it is interesting to note that 23 of the colleges do not require foreign language either for admission or graduation. In the year 1912-13 twenty of the colleges required this subject for admission, which shows that even though many institutions have raised

<sup>1</sup> Connecticut Agricultural College and the University of Porto Rico admit to freshman standing graduates of any four-year high school, and their requirements are not on the unit basis. For this reason these institutions are omitted from this discussion.

their entrance requirement, fewer institutions require foreign language now than five years ago.

Thirty-six institutions prescribe *history or social science*. The amount of preparation required in this subject is either one or two units, 28 requiring one unit and 8 requiring two units. In 1912-13 only 32 of the institutions prescribed preparation in history. There seems to be a tendency, therefore, to emphasize the necessity for better high-school preparation in this subject.

All institutions prescribe *mathematics*, and the amount of preparation specified varies from one to three and one-half units. One institution, the University of Missouri, requires but one unit. Two units are required by 26 institutions, two and one-half by 16 institutions, three by three institutions, and three and one-half by two institutions. Eleven institutions do not indicate how much preparation is required in either branch of the subject. Presumably they are willing to accept in any proportion any phase of the subject commonly taught in high schools. Of the 37 institutions that portion their requirements, 18 specify a minimum of one unit in algebra, 17 a minimum of one and one-half units, and two a minimum of two units. In geometry, 32 institutions specify a minimum of one unit, 4 specify one and one-half units, and one requires no geometry. Fourteen institutions specify a combination of one and one-half units in algebra and one unit in geometry, while 18 others specify one unit of each. In one institution, Alabama Polytechnic Institute, advanced arithmetic to the extent of one-half unit is required. It is possible also that some of the institutions that fail to apportion their requirements in mathematics accept advanced arithmetic, or arithmetic review, to meet the general requirements in mathematics. In general, however, it may be assumed that these institutions require one to one and one-half units of algebra and one unit of geometry.

Thirty-three institutions require preparation in *physics or other sciences*. Two require three units, five require two units, and 26 require but one unit. Nine of these institutions specify one unit in physics. One other institution, University of Tennessee, also requires that an unspecified amount of preparation in physics be included in the three-unit requirement in science. In at least one institution, University of Idaho, agriculture may be included in making up the requirements in science. Clemson College specifies one unit in agriculture. Many of the institutions specify that notebooks showing laboratory exercises shall accompany requests for science credit.

The following statement summarizes the prescribed requirements for admission:

*Distribution of the colleges according to the work prescribed for admission.*

Prescribed work.	Number of colleges.	Prescribed work.	Number of colleges.
English.....	48	History of social science.....	36
4 units.....	2	2 units.....	8
3 units.....	42	1 unit.....	28
2 units.....	4	0 units.....	12
Modern language.....	18	Science (including physics).....	33
3 units.....	2	3 units.....	2
2 units.....	16	2 units.....	5
1 unit.....	0	1 unit.....	26
0 units.....	30	0 units.....	15
Mathematics.....	48	Physics.....	9
3½ units.....	2	1 unit.....	9
3 units.....	3	0 units.....	39
2½ units.....	16	Agriculture.....	1
2 units.....	26	1 unit.....	1
1½ units.....	0	0 units.....	47
1 unit.....	1		

The total number of prescribed units ranges from 4, required by the University of Missouri, to 10½, as required by both Maryland State College and Rutgers College. The median number of prescribed units is 8. Four institutions require exactly the median number, while 22 require less and 22 require more than this number. This presentation is somewhat misleading on account of the institutions falling naturally into one of two groups—those that do and those that do not require foreign language. In the one case the median number of prescribed units is 9, and in the other case the median number is 7. The accompanying diagram (fig. 1) represents the frequency of the totals prescribed for admission.

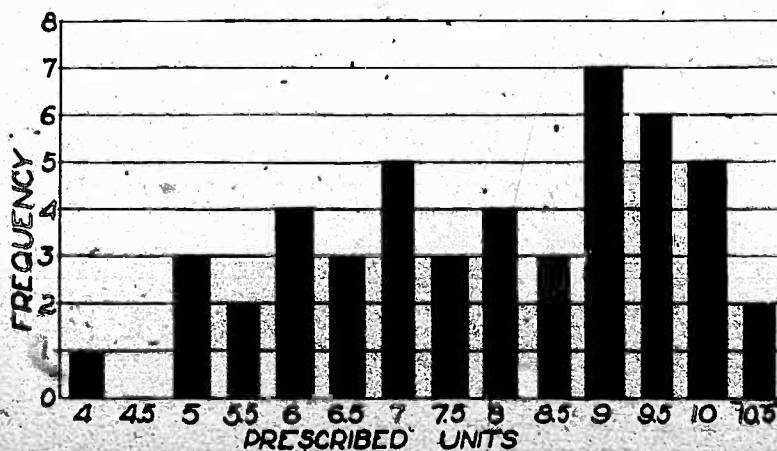


FIG. 1.—Distribution of the agricultural colleges according to the number of prescribed units in their requirements for admission.



OPTIONAL SUBJECTS.

The number of optional units required by the various colleges to satisfy the total requirement is inversely related to the number of prescribed units. The range is from  $2\frac{1}{2}$  to 11, and the median number is  $6\frac{1}{2}$ . The conspicuous feature concerning "optional requirements" is the growing liberality of the institutions, as shown in Table 4, with regard to the number of optional units that may be offered in vocational subjects. In 23 institutions there is practically no limit to the number of optional units that may be offered in vocational subjects. In 15 other institutions four or more units may be offered in vocational subjects. In only 10 cases is the number limited to less than four.

Many of the institutions conspicuously publish the statement that any well-taught, high-school subject may be offered. The following statement of the University of Missouri will serve to show the attitude of a large proportion of the institutions:

The university will accept for admission any 15 units from a first grade high school. If the distribution of units does not correspond to that recommended by the college to which the student is admitted, he will be required to carry courses in college to make up the deficiency, and this may delay his graduation.

Connecticut Agricultural College has taken an advanced step in granting freshman standing to any graduate of a four-year high school.

Reference to Table 6 will show that there is a great range of high-school subjects that may be offered for entrance. The subjects are arranged in natural groups, and the credit that may be allowed for each is shown as published in the respective catalogues. In certain subjects there is both a maximum and a minimum credit that may be offered. Whenever both are given in the catalogue, they are listed in the table. When only one figure is given for each subject, it is listed as the maximum except where the contrary meaning is obvious. In many cases, it may be regarded also as the minimum. Some catalogues fail to list the credit value of subjects other than those required for admission. In such cases the required amounts are listed in the table, but it may be assumed that credit in excess of these amounts may be allowed.

In Table 7 an attempt is made to show the frequency of occurrence of the subjects appearing upon the published lists of preparatory subjects accepted for admission. The table is presented to show that the more common high-school subjects are quite generally accepted. Forty of the colleges publish fairly complete lists, and taking this number as a basis, it may be seen that all of them accept English, Latin, Greek, French, German, algebra, plane geometry, physics, botany, Greek and Roman history, medieval and modern history, English history, and American history. At

least 30 of the colleges accept Spanish, solid geometry, trigonometry, physiography or geology, chemistry, zoology, physiology, agriculture, freehand drawing, and manual training or shopwork. At least 20 of the colleges accept advanced algebra, domestic science, and bookkeeping. Ten or more colleges accept general biology, economics, civics, mechanical drawing, domestic art, commercial law, commercial geography, stenography, and music. At least five colleges accept general science, general history, and pedagogy or psychology.

Owing to the gradual introduction of vocational courses into the high schools, there is bound to be much irregularity of preparation during the next few years. Much of the technical work now given during at least the first year in college eventually will be given in secondary schools, and the agricultural colleges during the next few years will be required to adjust their curricula to conform to the gradual modification of those of the high school. This should not be a difficult problem, but during the transition stage it will require considerable duplication of work. In home economics the colleges even now find it necessary to offer certain technical courses, like sewing and cooking, that have come to be regarded as secondary-school courses. In the near future such courses as plant propagation, elementary field and forage crops, types and breeds of live stock, elementary soils, etc., may be regarded in the same way, but for the benefit of the students who have not had such courses, the colleges also will need to offer them.

The vocationalizing of high schools may necessitate also the establishment of liberal standards of preparation that invariably may be enforced. The prescribed work in such standards it seems should include preparation in such subjects as are believed to be prerequisite to collegiate courses and the optional work may include satisfactory preparation in any generally recognized secondary-school subject. It may be desirable to classify the optional subjects, as is sometimes done now, and to require a certain proportion from each group according to the general needs of the curriculum selected. In other words, the secondary school may be expected to prepare the student in a general way for his chosen vocation.

#### ADMISSION TO ADVANCED STANDING.

Although definite information is lacking, there seems to be much uniformity among the various institutions in the methods of granting advanced standing. In general, two methods are followed: First, by examination, and second, by transfer of credits earned at certain approved institutions. Advanced standing is rarely granted for excess secondary school work, except by examination. Some institutions, however, on the strength of approved high-school certificates

showing credit for advanced work, admit students to advanced standing. In most cases collegiate credit for excess high-school work is limited to approximately 12 semester hours.

Most institutions grant advanced standing to students from other colleges or universities. Students from State normal schools also are admitted frequently with advanced credit. In most cases, certificates showing an honorable dismissal and a full statement of the student's high-school and collegiate record are required. Full credit is given usually for all work that has been done in the institution from which the student comes, provided such work corresponds to work that may be applied toward satisfying the requirements for graduation in the curriculum for which the candidate desires to register. Any deficiency in entrance requirements is satisfied usually before collegiate credit is granted.

Some institutions, especially the State universities, maintain lists of accredited colleges from which students may be admitted by transfer.<sup>1</sup> The basis upon which such lists are made varies with the institution. Where the lists are limited to colleges of a restricted region, the ratings usually are based upon an intimate knowledge of the institutions' standards, but the more distant colleges usually are accredited according to the ratings of the respective State universities.

In several States a definite cooperative arrangement exists between the State university and a number of smaller colleges and normal schools. Such cooperation provides for the transfer of students with full credit for two years' work from the smaller colleges to the university. In other cases it provides for a mutual exchange of students between two or more institutions at the end of two or three years. This arrangement makes it possible for students to complete their general work of the first two or three years at one institution and their special work at another institution which offers opportunities for specialization along lines not offered by other institutions of the State. Agricultural students, however, seldom avail themselves of this opportunity.

In general, students from other institutions that are admitted to advanced standing are required to complete at least one year's work in the institution from which they expect to graduate.

#### CONDITIONAL ADMISSION.

As shown in Table 4, it is a common practice to admit conditionally students who are unable to meet all the requirements. Of the institutions requiring 14 units or more for admission only two, University of Maine and Pennsylvania State College, distinctly state that stu-

<sup>1</sup> The lists of accredited higher institutions as maintained by the several State universities and other standardizing associations and foundations have been published by the United States Bureau of Education as Bulletin 17, 1917.



dents are not admitted with "conditions." Colorado State Agricultural College, also, may be included in this category, for such of its collegiate applicants who are unable to fully meet entrance requirements are required to register for and carry preparatory work in the three-year secondary curriculum. Two others, Purdue University and New Hampshire College of Agriculture, state that students who are deficient in any of the requirements are admitted only in exceptional cases. Mississippi Agricultural and Mechanical College, North Carolina College of Agriculture, and Clemson College, or those that require less than 14 units for entrance, do not admit students with conditions, but the first-mentioned institution accepts a one-unit condition in the prescribed work (geometry).

In at least nine cases—the colleges of Georgia, Hawaii, Illinois, Michigan, Minnesota, New York, Oregon, Utah, and Wisconsin—the practice is to admit students who meet the total requirements, but who may be deficient in some of the prescribed work. In two of these cases, Georgia State College and the University of Wisconsin, deficiency in foreign language only is approved. In the college of Hawaii students deficient only in physics, and in the University of Illinois students deficient only in one unit of science, are admitted conditionally. As may be seen from the table, 32 institutions, in addition to those admitting students deficient in prescribed subjects, frankly state that candidates who are unable to meet the total requirement may be admitted conditionally. Three of these fail to state in definite terms the degree of deficiency approved. One approves of two-thirds unit, 9 approve of one unit, 18 approve of two units, and 1 approves of three units deficiency.

It is a common practice in many institutions to accept students who are deficient in preparation into their two-year or three-year (secondary) curricula where an opportunity is offered for carrying certain courses that may be accepted for entrance. Such curricula are designated frequently as the "school of agriculture." As a rule students following this plan are required to spend more than four years for graduation. In a few cases, however, they are allowed to carry certain college courses as well and to receive collegiate credit after being regularly matriculated. Sometimes, for the benefit of graduates of the shorter curriculum who wish to register for a degree course, the institution provides an additional year's work which includes such required entrance subjects as are not given in the so-called "school of agriculture." Such a plan is followed in Colorado, where a three-year curriculum is supplemented with a one-year curriculum. With regard to this practice in Colorado, Dean S. A. Johnson writes:

The school of agriculture does not professedly prepare for college admission. We have so many students in the school, however, who wish to enter college that we

provide what is known as the fourth-year course. This is especially designed to include all those entrance requirements which do not appear in the school of agriculture course of study. The school of agriculture furnishes us about 20 freshmen each year. The work of the boys in the school of agriculture is extremely irregular, owing to the fact that some have had only eighth grade work and others anywhere from one to four years of high-school preparation. It is a task to arrange for the work of those who are desiring college entrance. We do not relinquish any of the requirements for the freshman year or make special concessions to the "school" in the matter of admission.

Although 10 institutions have no fixed time limit for the removal of entrance conditions, the general practice is to require students to make up all entrance deficiencies within one or two years. In one institution, University of Nebraska, the time limit is one semester; in 23 institutions it is one year, in 6 institutions it is two years; and in 2 colleges, Massachusetts and Utah, the limit is four years, or any time before graduation.

When it is understood that in most institutions the minimum requirement for graduation is fixed at a point approximating the maximum amount of work that the normal student can complete within the given time of four years, it is obvious that a student entering with a handicap of two or three units, equal to 12 to 18 semester hours, is likely to remain deficient even at graduation. With the limited information available, it is impossible to determine the proportion of conditioned students who require more than four years for graduation, but the belief is that it is remarkably small. Even though they may have passed all required examinations, conditioned students, on account of being overworked, are not likely to be as well prepared in collegiate subjects as those who enter college without such a handicap. If in some institutions this is not true, it is obvious that the minimum requirement for graduation is too low and that normal students are not making the best use of their time. It is well known, of course, that there is a great difference in students with regard to the amount of work which may be carried successfully, but the exceptionally capable students are not usually found among those who enter with conditions.

#### CONCLUSIONS CONCERNING REQUIREMENTS FOR ADMISSION.

It should not be understood that the present discussion is an argument in favor of uniform entrance requirements for all of the agricultural colleges. On the contrary, it is believed that in a few of the States conditions are not such as to warrant the adoption of 14 or 15 unit standards. The colleges that are habitually admitting large numbers of students with conditions should frankly announce their willingness to accept students with the equivalent of three years of high-school work if that represents the needs of their constituency. In such cases proper provision should be made for admitting to

advanced standing those who enter with credit for full four years' work. The practice in some institutions of admitting students to regular freshman standing and of making it easy to remove such conditions has had a serious effect upon drawing students from high school before the completion of four years' work. It would seem that in most States the time had come when the colleges can justly abolish conditional admission, except for candidates who are deficient in prescribed subjects.

In some of the colleges conditions may warrant the making provision for a subfreshman class. This seems to be the logical solution of the problem where there is a demand for both low entrance requirements and for a full four-year curriculum of college grade. With such a plan it is possible to maintain collegiate standards, and graduates in going to other institutions are eligible to graduate standing. Such a plan also encourages the development of four-year high schools, for students find little advantage in leaving home to complete their preparatory training. There is always a danger, however, in maintaining subfreshman work after the need for it has disappeared, for such a practice is not conducive to the development of a wholesome collegiate atmosphere.

The present study suggests the following principles concerning scholastic requirements for admission:

1. The colleges should exert an influence upon improving the secondary schools in such a way as to enable them to adequately prepare students for colleges to maintain their usefulness for the mass of students who may never enter college.
2. The colleges should prepare or have prepared lists of approved high schools within their States. To facilitate the classification of students from other States, the standards for approval should conform to generally accepted rules.
3. The colleges should accept to regular freshman standing all graduates from approved high schools.
4. The colleges should prescribe work only in such preparatory subjects as are regarded as prerequisite to the freshman work in the college curriculum for which the applicant seeks admission. In this connection it should be understood that the colleges in accrediting or passing upon the qualifications of high schools have an opportunity for prescribing the general qualification of their prospective students.
5. For the guidance of prospective candidates for the degree of bachelor of science in agriculture, each State should publish a statement showing what is believed to be appropriate sequences of studies and an acceptable amount of coordinated work covering the combined high school and college periods.
6. Students who fail to meet the regular requirements for admission should not be admitted to freshman standing. If admitted con-

ditionally, or to special or irregular classification, they rarely should be permitted to graduate within-four years.

7. To maintain collegiate standards in States where four-year high schools are not common, a subfreshman class should be maintained. Admission to such a class should be limited to candidates from communities that do not fully provide for collegiate preparation.

8. Special classification should not be granted to candidates under 21 years of age unless they satisfy regular entrance requirements.

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### PART III.—REQUIREMENTS FOR GRADUATION.

#### BASIS FOR COMPARISON.

Since there is considerable variation among the several colleges concerning the methods of awarding collegiate credit, the first consideration in the study of the requirements for graduation is to adopt as nearly as possible a common basis for comparison. In the first place, while all the institutions claim to maintain sessions of 36 weeks, there is apparently considerable variation in the number of working days in the college year. The number ranges, as nearly as is possible to determine by comparing catalogues, from 194 to 216 days. Because of its indefiniteness, this variation has been disregarded in the present comparison.

Secondly, the institutions vary with regard to the number of terms in each session, and this is responsible for a variation in the value of the credit unit. In 40 institutions the session is divided into two terms or semesters. In these institutions one hour of class work per week, or its equivalent, for one semester is the credit unit. In 10 institutions the session is divided into three terms, and in such institutions the unit of credit usually is one hour of class work per week, or its equivalent, for one term. A term-hour credit, therefore, is only two-thirds the value of a semester-hour credit. Correction on this basis has been made in the tables of comparison.

Some exceptions should be noted to the practice of awarding credit on the term-hour and semester-hour basis. In Georgia State College the unit of credit is the year hour, or one hour of class work per week or its equivalent for one session. In the Agricultural College of Utah, although the session is divided into three terms, the unit of credit is the semester hour. In Massachusetts Agricultural College the year's work is divided into four terms, the fourth comes in the summer and therefore does not affect the awarding of credit on the basis of term hours. Similarly, in the New York State College of Agriculture the year is divided into three terms; the third comes in the summer and therefore does not affect the awarding of credit on the basis of semester hours.

Although generally spoken of as an "hour," the recitation period in most institutions is of 50 minutes duration. There are four exceptions to this rule. Alabama Polytechnic Institute and the

Montana College of Agriculture maintain 60-minute recitation periods, and Rutgers College and the Ohio State University maintain 55-minute periods. To make correction for this variation no adjustment has been made. These differences, however, should be kept in mind when making comparisons.

The most significant variation in the credit value of college work is found in the different amounts of laboratory or field work required as equivalent to classroom work. In general one credit hour implies three actual hours of effort on the part of the student. Some institutions conscientiously insist upon this rule. In order to make allowance for the peculiarities of the various courses they require varying amounts of time in attendance at class or in laboratory. In courses like drawing or shopwork, for example, requiring no outside preparation, they demand three actual hours' attendance for each credit. For other courses, like physics, requiring only a small amount of outside preparation, they demand two hours of attendance at class; and for courses like English literature, requiring much outside preparation, they require only one hour in attendance at class.

Apparently, many institutions for the sake of convenience are anxious to maintain a plan for awarding credit that will permit of uniform credit for each kind of class work, whether recitation or practicum, rather than one that will permit of uniformity for each subject. In either case there are bound to be differences in credit value, for more depends upon the exacting requirements of the individual instructor than upon any arbitrary standard based upon class attendance.

Table 8 shows that 20 of the institutions uniformly require two hours of laboratory work for each credit hour. Two institutions uniformly require two and one-half hours as the laboratory equivalent; 10 uniformly require three hours; and 15 require varying amounts ranging from two to three hours. In three institutions there is no differentiation of credit between recitation hours and laboratory hours. The institutions requiring less than three hours may or may not require some outside time in preparation for laboratory work. In many of the institutions requiring varying laboratory equivalents two hours is the normal requirement and excess time required only in certain courses like shopwork and military drill. As a basis of comparison, therefore, the two-hour laboratory equivalent has been adopted in this discussion. At best it is a mere arbitrary standard and does not warrant absolute dependence, but undoubtedly it is more dependable than the use of college credits without adjustment. (See appendix.)

The value of the unit of credit for collegiate work may be much affected by the number of hours per week that students are permitted to carry. From Table 8 it may be seen that many colleges limit the

amount of work for which students may register. In many of the colleges that do not indicate a fixed amount the limits are automatically fixed by the term schedules, which vary from term to term. It should be understood that the items listed in the table represent the maximum and minimum amounts of work that students may carry without special permission. These limits generally may be exceeded under unusual conditions.

Of the colleges that maintain fixed limits the minimum number of hours per week for which students may register varies from 10, as with the University of Nevada, to 20, as with the Mississippi College. The median number is 15 hours, and in six colleges this is the minimum limit. In eight of the colleges the minimum limit is 12 hours. The maximum limit ranges from 15 hours, as in the Agricultural College of Utah, to 24 hours, as in the Agricultural College of Texas. In nine colleges 18 hours per week is the maximum limit; in five 20 hours is the maximum; and in four 21 hours is the maximum.

In general the heavier the schedule that students are required or allowed to carry the lower the value of the unit of credit. It is, of course, impossible to make correction for this variation, but the difference noted here should be kept in mind when comparing the requirements of the several colleges.

In comparing requirements for graduation in a curriculum like that of agriculture, which affords opportunity for specialization in many phases of the subject, it is quite necessary to restrict attention to one special line or major option. For the present discussion the agronomy or field crops option has been selected. In the few cases where no such option is offered, as in the colleges of Hawaii, Nevada, New Hampshire, Porto Rico, Rhode Island, Vermont, and Virginia, some other option has been selected. These colleges, in comparison with others, therefore, are likely to show a lower proportion of required work in agronomy and a higher proportion in some other special subjects. In some institutions a liberal elective system takes the place of the major option plan, and in each of these an approved combination of courses suitable for students specializing in agronomy has been used.

#### DISTRIBUTION OF WORK REQUIRED FOR GRADUATION.

Table 9, appearing in six parts, shows in detail the requirements for graduation in the four-year curriculum in agriculture for the several agricultural colleges. The requirements are recorded in corrected semester hours and are grouped according to subject and listed according to the year in which the work is required. Part I of the table shows the distribution of the work in nontechnical subjects; Parts II, III, and IV pertain to technical subjects; Part V is devoted to military and physical training and to certain science sub-



jects; and Part VI completes the tabulations pertaining to science, includes the work required as elective, and summarizes the requirements in all subjects. The subject classification employed here is similar to that employed in agricultural college circles. In a few instances certain unusual subjects have been classed with other distinct subjects, but in all such cases an effort has been made to indicate the fact by means of footnotes.

A few of the colleges maintain a liberal elective system, and in these the work required in the various subjects may vary somewhat according to the individual selection. Since most of these institutions require selections from certain groups or classes of subjects, the scope of the probable variation is limited. It should be remembered also that the present comparison is based upon a single subject of specialization, agronomy; and even in the colleges with the most liberal elective systems, the schedules of students specializing in a common subject, like the one chosen for this study, are remarkably uniform. The schedules from which these tabulations and comparisons are made have been prepared to satisfy all special requirements and have been approved by the several institutions as representing the prevailing practice. Figures indicating credit for courses that have been included to meet special requirements, and those for which substitutions may be made, are shown in italics. Some institutions, however, may make a practice of granting special permission for limited substitution, but such modifications of the prescribed schedules should have little effect upon the general distribution of the requirements as shown here. (See appendix, p. 97.)

To facilitate comparison of the requirements for graduation, the data contained in Table 9 have been summarized in Tables 10 and 11.

*Yearly distribution.*—The distribution of the requirements for graduation from the standpoint of the college year in which the work is required is summarized in Table 11. The table shows the number of colleges requiring work in each subject group in each of the four years and for all four years combined. It also shows, in semester hours, the range of the requirements and the median requirement for each group of subjects required each year and for all years combined. The institutions requiring no work in any particular subject in any given year were not considered in making up the median requirements in each case. The median number, therefore, represents the median practice of only the institutions requiring work in the subject in question.

As may be seen from the lower part of the last column of Table 11, the total requirement for graduation ranges from 124 to 228 hours, and the median requirement is 157 hours. The requirement for the freshman year ranges from 34 to 57 hours, and the median requirement is 41½ hours. For the sophomore year the range is very similar.



For the junior and senior years the maximum requirement is the same, as for the freshman and sophomore years and the minimum requirement is 27 and 28½ hours, respectively. The median requirement for each of these years is 38 and 37 hours, respectively. For the whole four years the distribution of the work from the subject standpoint is shown across the bottom of the table, and the proportionate distribution is shown graphically by figure 2.

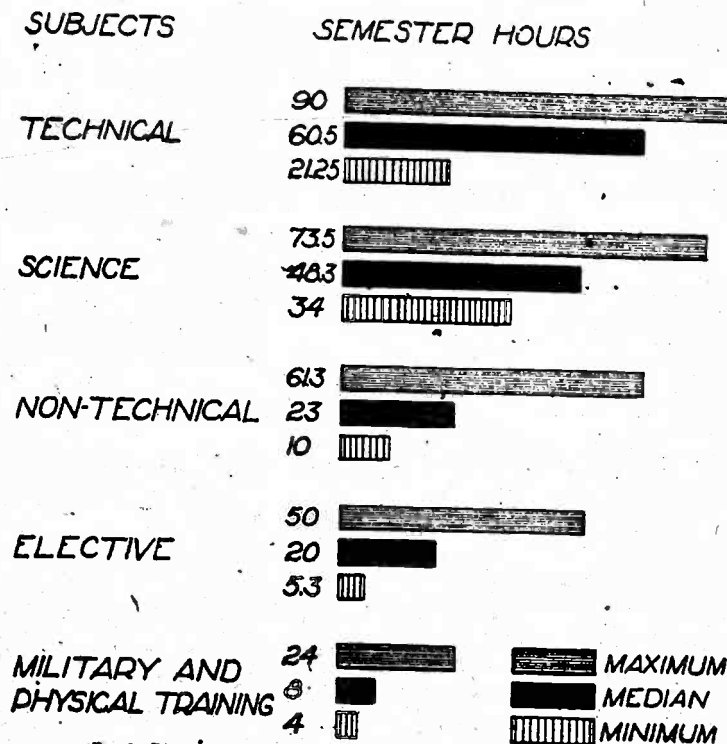


FIG. 2.—Distribution and range of the requirements for graduation in agriculture.

*Subject distribution.*—Since the amount of work required for graduation depends more upon the institution's standard of proficiency than upon the number of hours required in attendance at class, the figures representing total requirements have limited significance. For example, students who have completed the 228 semester hours required by the Virginia Polytechnic Institute may not be any better equipped than those who have graduated from the University of Missouri, with its minimum requirement of 124 semester hours. The value of an analysis of this kind, therefore, is not found in a comparison of total requirements so much as in a comparison of the proportional requirements in the various subjects included in the curriculum.

A summary distribution of the requirements among the various subject groups is shown on a percentage basis in Table 10. The percentage in each case is based upon the total requirement of the institution concerned, as shown in the second column. The subjects are grouped primarily under five heads, and the proportion of work required in each of these main subject groups is shown in the columns of italicised figures. The primary groups are divided into two or more subdivisions, and the sum of the items shown under the several subdivisions should equal the number given as the proportion for the main subject groups. Likewise, the sum of the percentages shown in italics should equal 100. The proportionate requirements in comparison with the average requirement is represented graphically in figure 4. The vertical line in each figure serves to indicate the position of each college in relation to the average requirement.

The mean numbers, as shown at the bottom of Table 10, may be regarded as the average proportions. Collectively, therefore, they represent the average distribution of the work required for graduation in agriculture. These averages in each case have been derived by considering all colleges, even though many of them may not require any work in certain subjects. The results are somewhat different when only such colleges as require work in the subject concerned are included in the calculation. The subjects most seriously affected in this respect are foreign language, mathematics, and social science. The average requirements in each case, including only the institutions requiring the subject, are 6.7, 3.7, and 5.2 per cent, respectively. Figure 3 is intended to represent the average distribution of the requirements for graduation.

*Requirements in all subjects.*—The total requirements for graduation for the several institutions is shown in Table 10. In the first column of figures is shown the requirement of each college, according to the institution's method of awarding credit. The figures range from 79, as required by Georgia State College, to 468, as required by Virginia Polytechnic Institute. The varying number of terms in each college year, and the varying practice with regard to the laboratory work equivalents, are the chief causes for the conspicuous variation in credit requirements. It is apparent, therefore, that the requirements for graduation, as expressed in terms of college credit, are not comparable.

In the second column of the table is shown, in semester hours, the total requirement for graduation, after correction has been made for varying methods for awarding credit. For convenience, the assumption that two hours of laboratory work are equivalent to one hour of lecture or recitation work has been followed. The totals vary from 124 semester hours, as required by the University of Missouri, to 228 semester hours, as required by Virginia Polytechnic Institute. The

mean total requirement, as shown at the bottom of the table, is approximately 165 semester hours. The median total requirement, as shown in Table 11, is 157 semester hours. Compared with the mean total requirement, this represents more nearly the consensus of opinion among the colleges concerning what constitutes a suitable total. It should be observed, however, that the value of the credit units employed here is lower than that of many institutions, and for this reason neither of these figures should be regarded as an appro-

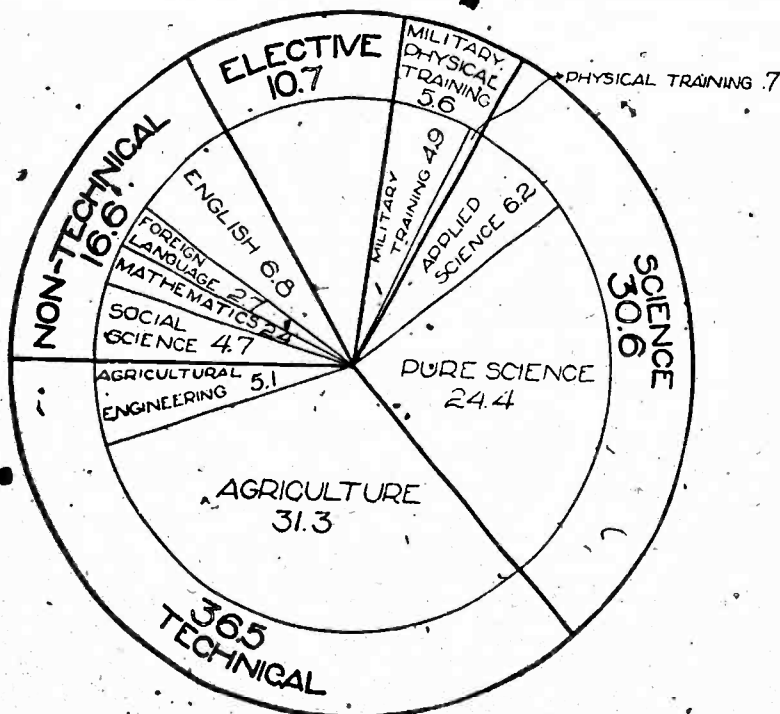


FIG. 3—Percentage distribution of the requirements for graduation in agriculture based upon the average requirement in each of the groups of subjects.

private total requirement. The median figure, nevertheless, serves as a basis of comparison for any college of agriculture whose standard of accrediting is similar to that employed here.

The requirements in the various groups of subjects are discussed separately on the following pages.

#### REQUIREMENTS IN NONTECHNICAL SUBJECTS.

Under this head are included the requirements in such subjects as English, foreign language, mathematics, history, civil government, economics, rural economics, marketing, sociology, rural sociology, library practice, journalism, psychology, and education.



All of the colleges require some work in nontechnical subjects. The amount ranges from 10 to 61½ hours, with a median requirement of 23 hours. This wide variation is not due to differences in entrance requirements, as might be expected, for the institutions requiring the most work in nontechnical subjects are not those admitting students with less than 15 entrance units. It is true, however, that the institutions with low entrance requirements require relatively high proportions of work in nontechnical subjects. In the freshman year the median requirement is 12 hours, and in each of the other years it is six hours. As shown in Table 10, the proportion of work required by the several colleges in all subjects classed as nontechnical ranges from 6.1 per cent, as required by University of Idaho, to 34.2 per cent, as required by Massachusetts Agricultural College. The average proportion is 16.6 per cent. (See fig. 3.) The colleges more nearly approaching the average are those of California, Florida, Minnesota, Texas, and Wisconsin. The relative proportions of work in nontechnical subjects for the several colleges is represented graphically in figure 4.

*English.*—Under English are included courses in grammar, composition, rhetoric, literature, library practice, argumentation, public speaking, and journalism. As shown in Table 9, Part I, all of the colleges require one or more courses in this group of subjects. All but one, Iowa State College, require work of this nature in the freshman year; 29 require it in the sophomore year; 16 in the junior year; and 6 in the senior year. The total amount of work required in this subject ranges from 4 to 24 hours, and the median requirement is 10 hours. The proportions of required work in English range from 2.6 per cent, as required by the Ohio State University, to 13.3 per cent, as required by Clemson Agricultural College; and the average proportion, as shown at the bottom of Table 10, is 6.8 per cent. The colleges more nearly approaching the average are those of Connecticut, Delaware, Illinois, Kentucky, Maine, Oklahoma, Pennsylvania, and Washington.

Twenty-eight of the colleges require independent courses in English literature. A few require general courses in English, which include literature. Seventeen colleges require either argumentation or public speaking. These subjects, generally, are required in the freshman or sophomore years, although five colleges require them in either the junior or the senior year. At least five colleges, those of Florida, Iowa, Kansas, Oklahoma, and Rhode Island, require some work in either news writing or journalism.

*Foreign language.*—Twenty of the colleges include work in foreign language as a requirement for graduation. In the Agricultural College of Utah, English may be taken in place of foreign language, and in North Carolina College and Rhode Island State College military



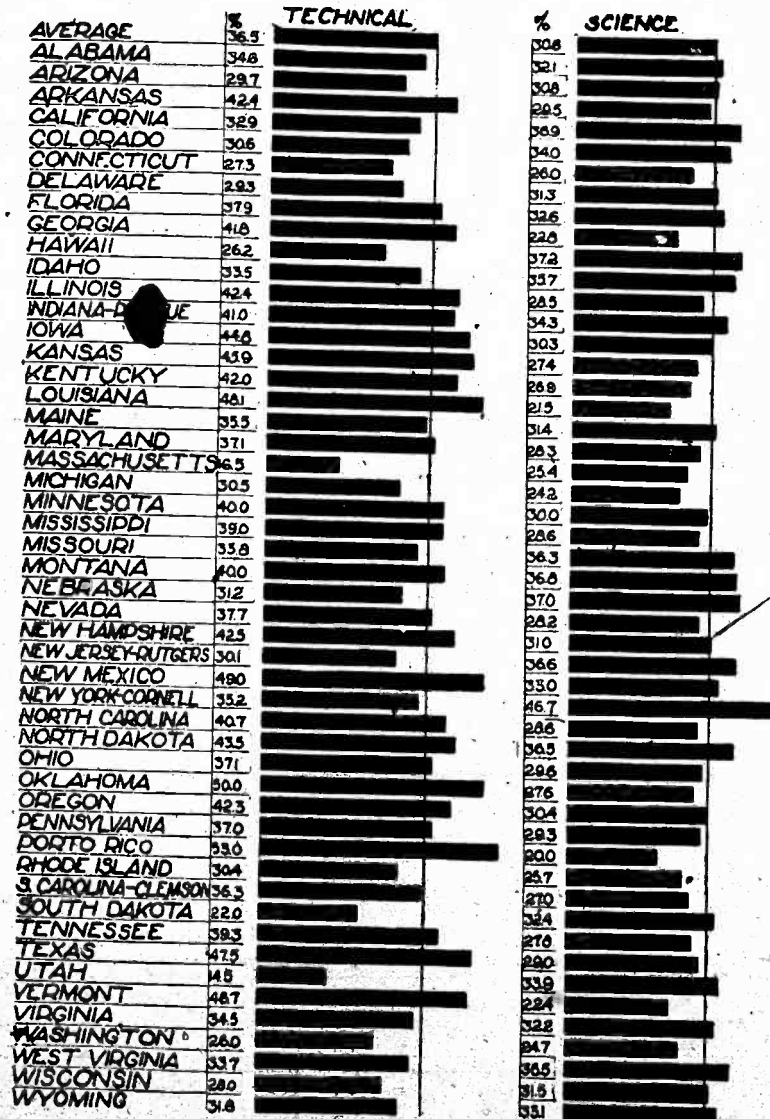


FIG. 4.—The variation among the colleges in the distribution of the required work for graduation in agriculture compared with the average distribution.

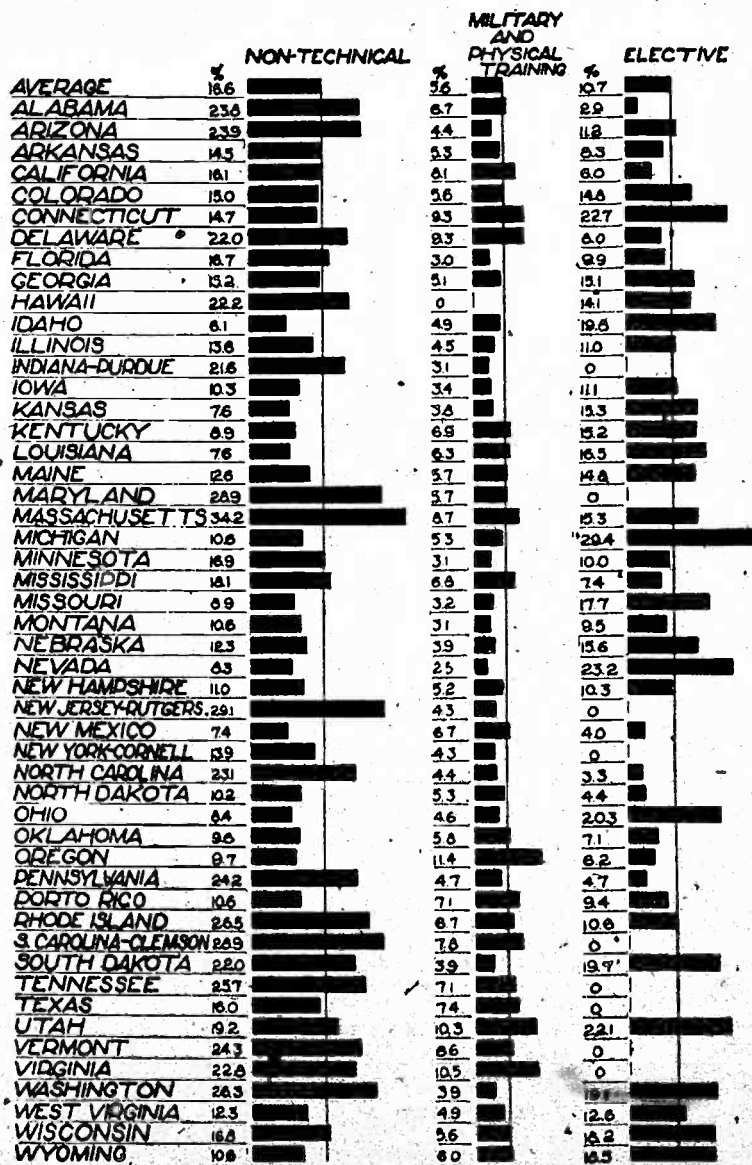


Fig. 4-Continued.

science may be substituted. In five colleges the work is required in a single year, while in the remaining 15 colleges it may be taken in two or more years. Fourteen of the colleges require at least a part of the foreign language work during the freshman year, 12 during the sophomore year, 5 during the junior year, and 4 during the senior year. The total amount of work required in foreign language ranges from 4 to 20 hours, and the median requirement among the colleges prescribing the subject is 12 hours. The proportion of the work required in foreign language ranges from 2.2 per cent, as required by North Carolina College, to 13 per cent, as required by the State College of Washington, and the average proportion is 6.6 per cent. The colleges more nearly approaching the average are those of Arizona, Indiana, Maryland, Pennsylvania, Rhode Island, and Wisconsin. By including in the calculation the colleges that require no foreign language, the average proportion is 2.7 per cent, but in this case the average based upon only those institutions requiring the subject is a better guide as to the most appropriate proportion. It is of interest to note, however, that a majority of the colleges do not require foreign language, and, as previously noted, 23 of them do not require it for either entrance or graduation.

*Mathematics.*—Thirty-two of the colleges require work in mathematics for graduation. This is preeminently a freshman subject, only six of the colleges requiring it in any other year, and these require it in the sophomore year. The amount of work required in this subject ranges from  $1\frac{1}{2}$  to  $13\frac{1}{2}$  hours and the median requirement is 5 hours. Considering only the colleges requiring the subject, the proportion of work required in mathematics ranges from 1.5 per cent, as required by Maryland State College, to 7.4 per cent, as required by Clemson College; and the average proportion is 3.7 per cent. By including the institutions requiring no mathematics, the average proportion is reduced to 2.4 per cent, and the colleges more nearly approaching the average are those of Arkansas, Delaware, Michigan, New Hampshire, and Rhode Island.

*Social science.*—Under this head are included all courses in such subjects as history, civil government, economics, rural economics, sociology, and education (including psychology). Forty-five of the colleges list, as a part of their requirements for graduation, at least one course in this group of subjects. Only 12 colleges require this kind of work in the freshman year, and only 5 in the sophomore year. During these years the work comprises mostly history and in a few cases civil government. Industrial history is a common subject. Some form of social science is required in the junior year by 28 colleges and in the senior year by 32 colleges. The median requirement for these two years is five and six hours, respectively. The work consists largely of general economics, rural economics, industrial



history, and marketing. In a few institutions work is required in psychology and education.

The total amount of work required in social science subjects ranges from 3 to 22½ hours, with a median requirement of 8 hours. Considering only the colleges requiring some work in this group of subjects, the proportion ranges from 1.7 per cent, as required by Virginia Polytechnic Institute, to 10.7 per cent, as required by Maryland State College, and the average proportion is 5.2 per cent. By including all of the colleges the average proportion is slightly lower, 4.7 per cent. The colleges more nearly approaching this average are those of Delaware, Nevada, New Hampshire, Rhode Island, South Dakota, and Tennessee.

#### REQUIREMENTS IN TECHNICAL SUBJECTS.

Under the head of technical subjects are included strictly agricultural subjects, agricultural engineering, farm mechanics, forestry, landscape gardening, and veterinary science. Farm management, including farm accounts, on account of its being given generally in one of the technical departments and because of its intimate relationship with technical agriculture, is classed as agriculture rather than as economics. Regular courses in rural economics are not classed under this head. Courses in genetics, including those in animal breeding and plant breeding, which are given often in conjunction with technical courses, are classed as technical.

Table 11 shows that the total requirements in technical subjects range from 21 to 90 hours, with a median of 60½ hours. (See fig. 2.) With three exceptions in the freshman year, all colleges require work in technical subjects in all years. In the colleges of California, New York, and Utah, a liberal elective system prevails and the taking of technical courses may be deferred until the sophomore year. In practice some of the elective technical courses are likely to be carried during the freshman year.

There is much variation with regard to the amount of technical work required each year. In the freshman year the amount ranges from 2 to 24 hours, and the median requirement is 10 hours. In the sophomore year the requirements range from 3 to 29 hours, with a median of 12 hours. In the junior year the requirements range from 2 to 30 hours, with a median of 15 hours. In the senior year the requirements range from 2½ to 34 hours, with a median of 18 hours. It may be seen that there is a uniform increase in the median requirement from the freshman year to the senior year.

Of the total requirements for graduation, as shown in Table 10, the proportion in technical subjects ranges from 14.5 per cent to 53 per cent. The colleges requiring the lower proportions, according to the present method of analysis, are those of Connecticut, Hawaii, Massachusetts, South Dakota, Washington, and Wisconsin, all of



which require less than 30 per cent. These colleges all show a high proportion of elective work, a large part of which, it may be assumed, is likely to be taken in technical subjects. The colleges requiring the higher proportions are those of Kansas, Louisiana, New Mexico, Oklahoma, Porto Rico, Texas, and Vermont, all of which require 45 per cent or over. With one exception, Louisiana, these colleges show a relatively low proportion of elective work, and this, to some extent, accounts for the relatively high showing in technical work. The average proportional requirement in technical subjects is 36.5 per cent, as represented graphically in figure 3. The colleges more nearly approaching the average requirement are those of Alabama, Florida, Maine, Maryland, Mississippi, Nevada, New York, Ohio, Pennsylvania, South Carolina and Virginia. The relative proportion of work in technical subjects for the several colleges is shown graphically in figure 4.

In Tables 10 and 11 the requirements in technical subjects are divided into two groups—agriculture and agricultural engineering. The requirements in the latter group are discussed in regular order. (See p. 48.) The requirements in strictly agricultural subjects range from 21 to 78 hours, with a median of 51 hours. Of the total requirements for graduation, the proportions required in this kind of work range from 14.5 per cent to 46 per cent. The average proportion is 31.3 per cent, and the colleges more nearly approaching the average are those of California, Idaho, Maryland, Minnesota, New York, and West Virginia.

*Agronomy and soils.*—As shown in Table 9, Part II, the required courses in this group are classed under five heads: (1) Field and forage crops, including judging and testing grain; (2) soils, including soil physics, classification of soils, soil surveying, etc.; (3) soil fertility and management, including fertilizers; (4) farm management, including farm accounts; (5) general or unclassified agronomy, including thesis and seminar requirements. Since this is the major subject selected as a basis for comparing requirements for graduation many courses that are included have been selected to meet the requirements for specialization. In at least 13 of the colleges one or more courses included here may be replaced by other courses, within certain restricted limits. In general, students specializing in agronomy will complete all of the courses offered by that department, and therefore the possibilities for election are limited largely to the selection of the time for taking the work.

In the following discussions, therefore, the comments concerning the year in which the work is required are applicable in general, but are subject to exceptions.

In the colleges of Hawaii, Nevada, New Hampshire, Porto Rico, Rhode Island, Vermont, and Virginia no opportunity for speciali-

zation in agronomy or field crops is offered. In these cases students are required to select an option either of a more general nature, such as general agriculture, or one of a special nature conforming to the demands of the region in which the institution is located. When comparing the requirements in agronomy, therefore, the institutions mentioned above are likely to show a lower proportion of time devoted to this subject and a higher proportion devoted to other technical subjects.

The amount of work required in this group of subjects ranges from 9 to 42 hours, and the median requirement is  $25\frac{1}{2}$  hours. By eliminating the colleges that offer no opportunity to specialize in this field, as noted above, the minimum requirement is 17 hours, and the median requirement is 27 hours. One-half of the colleges require during the freshman year one or more courses in this group of subjects; 39 require some of the work during the sophomore year; 46 during the junior year, and 48 during the senior year.

Forty-six of the colleges require courses in general *soil work*, and the amount required ranges as high as 13 hours. Only one college requires the work in the freshman year; 24 require it in the sophomore year; 26 in the junior year; and 12 in the senior year.

Thirty-seven colleges require courses classed as *soil fertility and management*. Among these the amount of work required ranges as high as 16 hours, but the median requirement is only  $4\frac{1}{2}$  hours. None of the colleges require the work during the freshman year; 10 require it during the sophomore year; 21 during the junior year; and 19 during the senior year.

Courses in *farm management and farm accounts* are required by 43 colleges. Among these the amount of work required ranges as high as 11 hours, and the median requirement is  $5\frac{1}{2}$  hours. This is predominantly an upper-class subject, 11 requiring the work in the junior year and 36 in the senior year. The requirements listed by seven colleges for the freshman and sophomore years are generally either survey courses in farm management or courses in farm accounts.

Twenty-three colleges require work classed here as *general agronomy*, which includes the thesis and seminar requirements. In a few cases, only, the work comprises a combination crops and soils course. The amount of work required under this head ranges as high as  $10\frac{1}{2}$  hours, and among those requiring such work the median requirement is 4 hours.

*Horticulture*.—The requirements under this head are grouped into five divisions as follows: (1) Plant propagation, including nursery practice; (2) pomology, or fruit growing; (3) olericulture, or vegetable growing; (4) landscape or ornamental gardening, including in a few instances floriculture; (5) general horticulture.

Nineteen colleges require work in *plant propagation*. Among these the amount ranges as high as 4½ hours, and the median requirement is 3 hours. This is generally given as a freshman subject, nine colleges requiring it in that year. Seven colleges, however, require it in the sophomore year, and three in the junior year.

♦ *Pomology* is required by 25 of the colleges. Among these the amount ranges as high as 7½ hours, and the median requirement is 3 hours. The work is more generally required in either the sophomore or junior years.

Twenty colleges require *olericulture*, and among these the amount required ranges as high as 6½ hours, but the median requirement is 3 hours.

*Landscape or ornamental gardening* is required by seven colleges, and among these the median requirement is but 2 hours.

Eighteen colleges require courses classed as *general horticulture*. The amount required ranges as high as 20 hours, but this is the requirement in one of the colleges that do not offer an opportunity for specialization in agronomy, and this amount represents the requirement for the curriculum in general agriculture. By eliminating this institution the maximum requirement is 6 hours and the median requirement is 3 hours. These courses are more generally required in the sophomore year.

*Agricultural engineering*.—Under this head are included all courses in drawing, shop work or farm mechanics, surveying, irrigation, drainage, farm structures, farm machinery, and other mechanical equipment. As shown in Table 11, 45 of the colleges require one or more courses from this group of subjects. Among these colleges the amount of work required ranges from 3 to 21 hours, and the median requirement is 9 hours. Thirty-two of the colleges require some of such work in the freshman year, 18 require some in the sophomore year, 22 require some in the junior year, and 19 require some in the senior year.

Table 10 shows that of the total requirement for graduation the proportion of work required in agricultural engineering ranges as high as 13.1 per cent, as required by Colorado Agricultural College, and that the average requirement is 5.1 per cent. The colleges more nearly approaching the average are those of Florida, Georgia, Illinois, Louisiana, New York, and North Carolina.

In Table 9, Part III, the courses in agricultural engineering are classified as follows: (1) Farm mechanics (shopwork); (2) farm machinery, including farm motors and engines; (3) rural architecture; (4) irrigation and drainage; (5) surveying and platting; (6) drawing; (7) general (or unclassified) agricultural engineering.

Twenty-three colleges require courses in *farm mechanics or shopwork*. Among these the amount of work required ranges from 1½ to



6 hours, and the median requirement is  $3\frac{1}{2}$  hours. Only seven of the institutions require the work in other than the freshman year.

*Farm machinery* courses are required by 29 colleges, and among these the amount of work required ranges as high as 7 hours, but the median requirement is 3 hours. Five require the work in the freshman year, 8 in the sophomore year, 12 in the junior year, and 8 in the senior year.

Only seven colleges require a separate course in *rural architecture*. Among these the amount of work required ranges from 1 to  $4\frac{1}{2}$  hours.

Courses in *irrigation and drainage* are required by 15 colleges. Among these the amount of work required ranges from  $1\frac{1}{2}$  to  $5\frac{1}{2}$  hours, and the median requirement is 3 hours. Except for two colleges that require the work in the sophomore year, the work is required only of upper classmen.

Twenty-one colleges require a separate course in *surveying*. Among these the requirements range from 1 to 5 hours, and the median requirement is 3 hours. This is predominantly a sophomore subject, although five require it in the freshman year, four in the junior year, and one in the senior year.

For the reason that mechanical and freehand drawing are frequently required in a single course, the subjects are combined in the table. Although separate courses in freehand drawing are sometimes required, the number of such cases does not justify the making of a distinct division. Seventeen colleges require work classed as *drawing* and among these the requirements range from 1 to 5 hours, with a median of 3 hours. Except for three cases, this subject is required in the freshman year.

Ten colleges require courses in either *general agricultural engineering* or in two or more subjects in the classification adopted here. The requirements range as high as 7 hours, and the median requirement is a little over  $3\frac{1}{2}$  hours. Seven of the ten colleges require this work in either the junior or senior year.

*Genetics*.—Under this head are included all distinct courses in animal or plant breeding and in general genetics. Forty-two of the colleges require some work in this group of subjects. Among these the requirements range from 2 to 9 hours, and the median requirement is 4 hours. Eight colleges require distinct courses in *animal breeding*, ranging in amount of work from  $1\frac{1}{2}$  to 6 hours. For students specializing in animal husbandry, the proportion of colleges requiring such work is, of course, much higher. Many other colleges require some work in animal breeding, but it appears under other classifications, especially under the head of types and breeds of live stock. Distinct courses in this subject are generally required in either the junior or senior year.



Thirty-one colleges require distinct courses in *plant breeding*. Among these the amount ranges from  $1\frac{1}{2}$  to 8 hours, and the median requirement is 3 hours. This work is uniformly regarded as an upper-class subject.

Seventeen colleges require at least one course in *general genetics*. Among these the requirements range as high as 6 hours, and the median requirement is 3 hours. This also is regarded generally as an upper-class subject.

*Animal husbandry*.—In Table 9, Part IV, the courses in this subject are classified as follows: (1) Breeds and types of live stock, (2) feeding and management of live stock, (3) dairy husbandry and dairy industries, (4) poultry husbandry, (5) veterinary science and practice, (6) general (or unclassified) animal husbandry. All colleges but one require at least one course under this classification. The one exception, University of California, specifies that a definite proportion of the elective work must be in agricultural subjects, and undoubtedly all students specializing in agronomy are advised to carry at least one course in animal husbandry.

The total amount of work required in these subjects ranges from 3 to 34 hours, and the median requirement is 14 hours. The work generally is required during the first two years, but many courses, like feeding and management, are required by upper-class men.

Forty-six of the colleges require work in courses classed under *breeds and types of live stock*. Among these the amount ranges from  $2\frac{1}{2}$  to 9 hours, and the median requirement is  $4\frac{1}{2}$  hours. At least one course in the subject is required in the freshman year by 32 colleges, in the sophomore year by 18 colleges, in the junior year by 11 colleges, and in the senior year by 3 colleges.

In *feeding and management of live stock*, 31 colleges require at least one course. Among these the amount of work required ranges from 2 to 9 hours, and the median requirement is 3 hours. The course is required more generally by juniors, 19 colleges so requiring it, but 2 colleges require it in the freshman year, 8 in the sophomore year, and 9 in the senior year.

*Dairy husbandry* is required by 36 colleges, and among these the amount of work required ranges from 2 to 8 hours, with a median requirement of a little over 3 hours. In 12 colleges the work is required in the freshman year; in 16 it is required in the sophomore year; in 10 the junior year; and in 5 the senior year.

*Poultry husbandry* is required by 19 colleges. Among these the amount of work required ranges from 1 to 6 hours, and the median requirement is  $2\frac{1}{2}$  hours. This subject is required more generally in the sophomore and junior years.

Courses relating to *veterinary practice* are required by 19 colleges. The requirements range from 2 to 9 hours, with a median of 5 hours.

This work also is required more generally during the sophomore and junior years, although 5 colleges require it in the senior year.

In 5 colleges general or unclassified courses in animal husbandry are required. The requirements range from 2 to 6 hours.

*Forestry.*—In seven colleges two-hour or three-hour courses in forestry are required. Two colleges require it in the freshman year, two in the sophomore year, and three in the senior year.

*General agriculture.*—In a few colleges general courses in agriculture are required. In others students are required to attend agricultural seminars or to engage in practical farm operations, for which credit is given. In still others certain courses, like "agricultural investigations" and "methods of research in agriculture," are required. In two other colleges a definite amount of work must be selected from among a group of agricultural courses. In such cases and in those mentioned above the requirements have been grouped together under general agriculture. In 16 colleges such work is required, and the amount ranges from 1 to 17 hours.

#### REQUIREMENTS IN SCIENCE SUBJECTS.

Under the head of science are included all requirements in the strictly science courses, as well as those intimately related to agriculture, such as agricultural chemistry, agricultural botany, soil bacteriology, economic entomology, and plant diseases.

The amount of work required in all science subjects, as shown in Table 11, ranges from 34 to 73½ hours, with a median requirement of 48½ hours. (See fig. 2.) All of the colleges require science in the freshman and sophomore years; 45 require it in the junior year, and 33 require it in the senior year. There is much variation in the amount of science required each year. In the freshman year the requirements range from 2½ to 24½ hours, while the median requirement is 15½ hours. In the sophomore year the range is from 9 to 32 hours, and the median is 18 hours. In the junior year the range is from 3 to 24 hours, and the median is 12 hours. In the senior year the range is from 3 to 20 hours, and the median is 6 hours.

In some colleges the schedule seems to be overloaded with science in one year, and quite deficient in another year. One institution calling for but 3 hours during the freshman year, calls for 28 hours in the sophomore year. The curriculum in several institutions calls for three or four heavy science courses during the same year. One curriculum, for example, calls for 10 hours in chemistry, 8 hours in botany, and 6 hours in bacteriology in the freshman year. Another calls for 8 hours in botany, 5 hours in zoology, 13 hours in chemistry, and 6 hours in physics during the sophomore year. In this same institution the science requirements for the four years are 8 hours, 32 hours, 17 hours, and 5 hours, respectively.

As shown in Table 10, the proportion of work required in science subjects by the several colleges ranges from 21.5 per cent, as required by Louisiana State University, to 46.7 per cent, as required by Cornell University. The average proportion, which is represented graphically in figure 3, is 30.6 per cent. The colleges which more nearly approach this average are those of Arizona, Arkansas, Delaware, Iowa, Maine, Minnesota, New Hampshire, Ohio, Oregon, Pennsylvania, and Wisconsin. The relative proportion of work required in science by the several colleges is represented graphically in figure 4.

*"Applied" science.*—In order to show the proportion of the science requirements which is in subjects closely related to agriculture, such as agricultural chemistry, agricultural botany, agricultural bacteriology, economic entomology, and the like, an arbitrary division of the work has been made in Table 10. The courses in such subjects have been classed as "applied" science and the remaining science courses as "pure" science. There is no well-marked distinction between these two divisions, for much depends upon the teaching methods employed. Furthermore, courses with like content frequently are given different names. A course in plant diseases and their control in one college, for example, may be very similar to a course in plant pathology in another college. For this reason plant pathology is regarded here as agricultural botany and classed as "applied" science. Plant physiology, on the other hand, as it is taught in many colleges, may be as closely related to agriculture as plant pathology, yet it has been classed under pure science. Despite these apparent inconsistencies, the result of such a classification is suggestive. All but three of the colleges require at least one course in applied science. The proportions run as high as 19.3 per cent, as required by Oregon State Agricultural College, and the average proportion is 6.2 per cent. Other colleges requiring high proportions of science courses closely related to agriculture are those of California, Montana, Nebraska, New York, and Wisconsin. Twenty-one of the colleges require at least the average proportion.

*Biology.*—Under this head are included all required courses in the various phases of botany, including bacteriology, and in zoology and entomology. As shown in Table 9, Part VI, all colleges require some work in this group of subjects. The amount of work required ranges from 8 to 36½ hours, and the median requirement is 23½ hours.

The work in botany is somewhat loosely classified into three divisions—general botany, agricultural and economic botany, and bacteriology. The former includes all phases of the subject except those indicated by the two latter divisions. Forty-seven colleges require some work in *general botany*, and the remaining three require work classed as *agricultural or economic botany*, which undoubtedly



includes several phases of the subject. The amount of work required in general botany ranges as high as 24 hours, and the median requirement in the subject is 9 hours. This is regarded generally as a freshman or sophomore subject, but courses in physiology and histology are required frequently in the junior and senior years. Thirty-three colleges require botany courses in the freshman year, 21 in the sophomore year, 17 in the junior year, and 5 in the senior year.

In 32 of the colleges part of the requirements in biology is listed as *agricultural or economic botany*. On account of the common practice of including under plant pathology the required work in the control of plant diseases, the required courses in this subject have been grouped under agricultural botany. The required work under this head ranges as high as 11½ hours, with a median requirement of 3½ hours. Four colleges require at least part of such requirement in the freshman year, 7 in the sophomore year, 15 in the junior year, and 14 in the senior year.

Forty-two of the colleges require either general or special work in *bacteriology*. The amount ranges as high as 10½ hours, and the median requirement, among those requiring the subject, is 5 hours. This is regarded generally as an upper-class subject. One college requires it in the freshman year, 12 in the sophomore year, 20 in the junior year, and 15 in the senior year.

Forty-one colleges prescribe at least one course in *zoology*. The amount ranges as high as 10 hours, and among those requiring the subject the median requirement is 4½ hours. This subject usually is required in either the freshman or sophomore year. Ten colleges require it in the freshman year, 26 in the sophomore year, and 6 in the junior year.

Thirty-eight of the colleges require one or more courses in *entomology*. The amount ranges as high as 10 hours, and among those requiring the subject the median requirement of 4 hours. The work is more commonly required in either the sophomore or junior year. Two of the colleges require at least part of the work in the freshman year, 13 in the sophomore year, 19 in the junior year, and 11 in the senior year.

*Chemistry*.—This subject is required in varying amounts by all of the colleges. The requirement ranges from 8 hours to 32 hours, with a median of 18 hours. The required work in chemistry, as shown in Table 9, Part VI, is classed under five heads, as follows: General or inorganic, qualitative, quantitative, organic, and agricultural.

All of the colleges require *general or inorganic chemistry*. The amount of work required ranges from 3 to 15 hours, with a median of 8½ hours. Forty colleges require the work in the freshman year; 11 require it in the sophomore year; and in 1 it may be taken in either year.



Twenty-seven colleges require *qualitative analysis* as a distinct course, and a few others apparently require it as a part of the general course in chemistry. The amount of work required ranges from  $1\frac{1}{2}$  to 10 hours, and the median requirement, among the colleges prescribing the subject, is 4 hours. This is predominately a sophomore subject, 18 colleges requiring it in this year; 5 in the freshman year, and 4 in the junior year.

Twenty colleges require *quantitative analysis* as a distinct course, and among these the median requirement is  $3\frac{1}{2}$  hours. This subject generally is given as a sophomore or junior course. One college requires the work in the freshman year, 8 in the sophomore year, 9 in the junior year, and 2 in the senior year.

Thirty-four colleges require *organic chemistry*, and among these the amount of work required ranges from  $1\frac{1}{2}$  to 10 hours, and the median requirement is  $3\frac{1}{2}$  hours. This may be regarded as a sophomore subject. One college requires it in the freshman year, 20 in the sophomore year, 11 in the junior year, and 2 in the senior year.

Thirty-two colleges require *agricultural chemistry*, and among these the requirement ranges from  $1\frac{1}{2}$  to 11 hours, with a median of 4 hours. This is predominately a sophomore subject, being required in that year by 17 colleges, but 1 requires it in the freshman year, 13 in the junior year, and 7 in the senior year.

*Physics*.—Thirty-six colleges require physics for graduation. Of the 14 that do not require physics, 3 require the subject for admission. In 11 colleges, therefore, students may graduate without having had physics in either high school or college. The amount of work required in physics ranges from 3 to 10 hours, and the median requirement is 6 hours. Eleven colleges require the work in the freshman year, 19 in the sophomore year, and 6 in the junior year.

*Geology*.—Twenty-nine colleges require geology for graduation. Among these the amount of work required ranges from 2 to 7 hours, and the median requirement is 3 hours. This is predominately a sophomore subject. In 2 colleges the requirement in geology must be satisfied during the freshman year, in 13 colleges during the sophomore year, in 6 colleges during the junior year, and in 5 colleges during the senior year. In 3 institutions the requirement is divided between two years.

#### REQUIREMENTS IN MILITARY AND PHYSICAL TRAINING.

All courses in military science and tactics and in physical education, including hygiene and human physiology, are grouped under military and physical training. As shown in Table 9, Part V, an attempt has been made to separate military training from physical education. Since many of the colleges require military courses which

include physical education, a study of the combined, rather than the separate, requirements is recommended.

All of the colleges, except that of Hawaii, require work in this group of subjects. The amount required ranges from 4 to 24 hours, and the median requirement is 8 hours. Forty-nine of the colleges require some work in these subjects during both the freshman and sophomore years. Seventeen require some such work during the junior year, and 10 require it during the senior year. In both the freshman and sophomore years the requirements range from 2 to 7 hours, and the median requirements are 4 and 3 hours, respectively. Among those requiring the work during the junior and senior years, the requirements range from 2 to 6 hours, and the median requirement in each year is 3 hours.

On the percentage basis the requirements in military and physical training range from 2.5 per cent, as required by University of Nevada, to 11.4 per cent, as required by Oregon State Agricultural College. The average proportion is 5.6 per cent. (See fig. 4.)

Ten colleges require some work in either personal hygiene or human physiology and 16 require distinct courses in physical education. The requirements in each range from 1 to 4 hours, and the median requirements are 1 and 2 hours, respectively.

#### REQUIREMENTS IN ELECTIVE WORK.

In most institutions the amount of work required as elective is a definite quantity. In a few colleges, however, a limited number of substitute courses may be taken in place of certain courses in the regular schedule, but such courses are not classed here as elective. In other colleges the elective work is prescribed in such a way as to require a minimum number of hours in technical work, a minimum number in nontechnical, a minimum number in science, and a minimum number as free elective. In cases where the prescription is sufficiently definite, selected courses to meet the requirements have been included in the schedules from which the tables were made and upon which the present discussion is based. In other words, the general and free elective courses only have been classed as elective.

In other cases, where a liberal elective system prevails in place of the major option plan, a selected number of courses have been included to meet the specified requirements for specialization. Such selections have been made, or at least approved, by the colleges concerned. In such cases also the elective work listed in the table usually comprises only a small proportion of the total work shown as elective in the catalogue schedules, or that proportion which may be regarded as free elective. In the Cornell curriculum, for example, the table shows no elective work, while in reality the work of the last two years is wholly elective under the limitations of the advisory

system. The outline in this case includes all required work and a selected number of courses recommended for students specializing in farm crops. In the other institutions in which a liberal elective system takes the place of the major option plan a similar adjustment has been made. In a few other institutions the suggested curriculum in each major option is somewhat elastic, and in these it is possible for students to select a combination of courses which may show proportions somewhat different from those shown in the tables.

Since so much variation occurs with regard to the method for determining the amount of work required as elective, a comparison of the colleges from this standpoint is not justified. The actual and percentage proportions of elective work required by the several colleges are indicated in Tables 9 and 10, so that they may be considered in connection with the study of the distribution of the work of each institution.

In actual practice the elective work shown in the tables would be distributed in varying proportions among the several subject groups. In the Michigan Agricultural College, for example, the proportion of required work in each of the subject groups shown in Table 10 is below the average, but, on account of the high proportion of elective work, it may be regarded as very near the average in each group. In Purdue University, on the other hand, all work is prescribed, and for this reason the proportion of work required in each of the main subject groups is higher than the average. A proportionate distribution of the elective work among the various subject groups is not always justified, for in some institutions students are expected to select a large proportion of their elective work from certain groups of subjects. As a rule students select a large proportion of their elective work from among the technical courses. For this reason many of the colleges have prescribed nearly all of the nontechnical work that they expect students to carry and leave a considerable proportion of the science and technical work to be elected.

The question as to how much freedom should be given students in the matter of schedule making is still one of contention. There are extremists in both directions, but there seems to be a movement toward a middle ground. Some institutions prescribe all the work of the four years, and in these the only choice given the student is the selection of a major option. Others prescribe all of the work of the first two years, and at the beginning of the junior year permit students to select a major option in which a portion of the work is prescribed. Some colleges publish tentative schedules for major options which may be modified to suit the individual needs of students. Still others prescribe certain courses that must be taken some time before graduation and permit the students to select additional courses to meet the total requirement. These additional courses sometimes must be selected from certain groups or from the courses given by certain divisions of the institution. In the institutions where the



liberal elective system takes the place of the major option plan, students may specialize in any department of the college of agriculture. In some of these cases specialization implies a stated number of credit hours in courses offered by the selected department and sometimes a stated number in closely allied courses. Since the practices of the several colleges with regard to the method of prescribing curricula vary so greatly and because of there being no well-marked lines of distinction between them, no attempt has been made to classify the colleges on this basis.

The student advisory system is becoming more common, and in cases where much freedom is allowed students in the selection of courses to meet the minimum requirements this system generally is in force. It is possible that in many institutions too much freedom prevails in this respect. The student advisory work sometimes is in the hands of junior members of the faculty who may have distorted ideas with regard to the relative value of courses and who too often magnify the work of the department in which they happen to be situated. It is possible that under such conditions suggestive outlines for each line of specialization would serve as a guide to the students and advisers alike.

#### REQUIREMENTS FOR ADMISSION AND GRADUATION COMBINED.

The average distribution of the required work for the bachelor's degree in agriculture, covering the high school and college curricula combined, is shown in Table 12.

The chief advantage of such a tabulation is found in the opportunity offered to each institution for comparing its distribution of required work with the average distribution. Although somewhat deficient as a basis of comparison, the average distribution may be regarded as the main criterion upon which to estimate the efficacy of the various practices. Since considerable variation exists with regard to whether certain subjects should be studied in the high-school period or the college period, the present table furnishes an opportunity also for determining whether any excess or deficiency requirements for either admission or graduation is balanced up in the total eight-year requirement. For example, an institution with a low mathematics requirement for admission may justify its practice if its total eight-year requirement is equal to the average for the eight-year period. In like manner an institution with a low English requirement for the collegiate period may justify its practice if its total eight-year requirement in English approximates the average.

The remarkable variation in the distribution of the prescribed work for the eight-year period suggests that there is a lack of a clear conception of what should constitute the requirements for a bachelor's degree. As examples, the requirement in English ranges from 8 to 19 per cent of the total requirement, in foreign language from 6 to 11



per cent, in mathematics from 3 to 16 per cent, in social science from 1 to 12 per cent, in science from 10 to 26 per cent, and in technical subjects from 7 to 26 per cent. Since the colleges control an average of 71.6 per cent of the work of the eight-year period, as shown in Table 12, it is extremely important that their requirements represent the most appropriate proportions and sequences.

Some of the variations in the prescribed requirements for the eight-year period may be attributed to the differences in aim of the several institutions. Although statements of aims are frequently quite deficient or entirely wanting, the principal aim of the most of the colleges of agriculture presumably is to train men for the occupation of farming. Many of the colleges, however, place the emphasis upon training for rural leadership and are more concerned in turning out agricultural teachers, agricultural investigators, agricultural engineers, agricultural economists, and agricultural sociologists than in developing farm operatives. The curricula of such colleges usually require a higher proportion of science and "cultural" or nontechnical courses and a corresponding lower proportion of technical courses.

Assuming that the prevailing tendency among the colleges is to turn over gradually to the secondary schools the function of training persons for the occupation of farming and to stress more and more the training for rural leadership, the collegiate curriculum in agriculture is bound to undergo certain modifications. Such a change in function undoubtedly will tend to raise the proportion of work required in science and in nontechnical subjects and to lower the proportion required in technical subjects. The proportionate requirements for the eight-year period, however, may remain quite constant, so far as technical subjects are concerned, for certain technical courses will be pushed back to the high-school period, and thus make way for more work in science and in such nontechnical subjects as rural economics and rural sociology.

If such a tendency exists, the average requirements in science and nontechnical work, as indicated in the table, are too low to meet the needs of the colleges which have adopted this modified function. Many colleges, of course, offer curricula or options for the special purpose of preparing students for the several phases of professional agriculture. The contents of such curricula or options show a wide variation in the same institution. In other words, several institutions offer two or more agricultural curricula, each with a specific aim. This practice, eventually must supersede that in which candidates for professional careers, such as teaching, are obliged to select a specialized curriculum in some phase of technical agriculture. The content of a curriculum for the training of agricultural teachers, of agricultural journalists, and of agricultural sociologists must be quite different from that for the training of farm operatives, and differ-

entiation should begin as early as possible to insure the most appropriate sequence of courses.

It is apparent from the foregoing that in determining appropriate requirements for the degree of bachelor of science in agriculture the work of the eight years, or even 10 years, including possibly the work of the seventh and eighth grades and undoubtedly the preparatory and collegiate requirements, should be studied together. In this connection, as suggested under the discussion of the requirements for admission, there should be made available in each State a statement, showing what is believed to be appropriate requirements for a degree in each line of specialization offered by the State-supported higher institutions. Such a statement may show several appropriate sequences in each line of specialization. The suggested sequences in any line necessarily would be similar from the standpoint of distribution among the various types of courses. That is, each sequence would embrace a certain proportion of tool subjects, a certain proportion of pure science subjects, a certain proportion of technical subjects, and so on. Working under such a plan, prospective candidates for the bachelor's degree may select early in their school career an approved sequence which, if completed successfully, should entitle them to a degree at the end of eight years or 10 years, as the case may be. Candidates who change from one sequence to another will understand that they can receive credit only for such completed courses as are applicable to the selected sequence, and those who make radical changes should not expect to graduate within the normal period.

Such a plan also suggests the necessity for establishing credit equivalents for work done in the high school and the college, respectively. That is, a course which may be taken either in the high school or the college should carry a stated amount of credit, depending upon the place in the eight-year period that the course was taken. Some institutions have already established such equivalents. In a few colleges equal credit apparently is given for such courses when carried in high school, but the more common practice is to grant college credit in the proportion of one-half or two-thirds for work done in high school. In other words, for each high-school unit, which from the standpoint of time is equal to 10 semester hours, the practice is to grant college credit to the extent of five or six semester hours.

#### CONCLUSIONS CONCERNING REQUIREMENTS FOR GRADUATION.

It is not the intention here to suggest arbitrary standards concerning the requirements for graduation. On the contrary, it is believed that the several institutions can serve their constituencies more efficiently if allowed to function independently and unhampered by injected restrictions. The present study, however, has

called attention to certain variations in practice which, if eliminated, should beneficially affect the work of the institutions both individually and collectively. Absolute dependence should not be placed upon the tabulations and comparisons. They merely suggest without emphasis many opportunities for individual institutions to modify effectively their present practices. Special attention is called here to the necessity for a *more uniform basis for collegiate credit*. The task on the part of prospective students and of school officials who are called upon to advise prospective students would be facilitated if a uniform basis for awarding collegiate credit were followed by the group of colleges under discussion. This does not infer that all colleges should follow the two-semester plan or that all should follow the three-term plan, for it is an easy matter to change term-hour credits to semester-hour credits. It may be advisable, however, for the colleges that use term hours as their unit of credit to publish a statement concerning the relative value of the two units. By far the larger proportion of the colleges have adopted the two-semester plan and, for this reason, the semester hour seems to be the more acceptable unit.

The most urgent need in this respect is for the adoption of a unit of credit that shall have approximately the same value in all of the agricultural colleges. Such a modification in practice will necessitate concerted action on the part of the several colleges. It will call for a definite understanding with regard to the amount of credit that should be granted for each kind of exercise, and it will be necessary to take into consideration the varying needs of the several subjects from the standpoint of the relative proportion of time necessary for outside preparation. To establish a standard credit unit it will be necessary also to harmonize the practice of the several institutions with regard to the amount of work that students are permitted to carry. This alone will not insure equality in scholarship, but it should tend toward uniformity in quantitative requirements for graduation.

The chief deductions from the study of requirements for graduation follow:

1. The lack of uniformity among the colleges in the method for awarding credit renders difficult the comparison of institutions from the standpoint of the amount of work required for graduation and interferes with the free and just exchange of credit for work done in two or more institutions.
2. The great variation among institutions in their quantitative requirements for graduation indicates that in some institutions there is either a great waste of time or that in others quality of work is sacrificed for quantity.
3. The wide difference of practice with regard to the relative proportion of prescribed and elective work offered by the institutions



shows that the question of freedom of election is still a matter of contention. It would seem that one or the other of these two practices, so widely different in principle, should be superior to the other. To some extent the difference in practice undoubtedly is due to institutional differences. Some institutions that are liberally supported and that maintain rigidly prescribed curricula may find it advantageous to make their courses somewhat more elastic than at present, while others that have adopted the free elective system should guard against such freedom of election that is likely to prevent appropriate concentration of effort or that which is not accompanied by the advice of mature instructors.

4. The variation in practice concerning the placement of courses within the four-year schedule suggests a disagreement among colleges concerning principles of education. The most conspicuous disagreement in this respect is the tendency on the part of some colleges to defer the offering of strictly agricultural courses until the sophomore or even the junior year, while others require such work from the very beginning of the course. There is a growing belief that more technical work should be given early in the curriculum. Reference to Table 9 will show other conspicuous variations in practice in this respect.

5. The uneven distribution in the curriculum of the heavy science courses suggests that in making up schedules some institutions apparently give more attention to classroom and laboratory facilities and to the convenience of instructors than to a careful balancing of the student's work.

6. The variation in the content of the curriculum suggests a lack of a clear concept of what should be required for the bachelor's degree in agriculture. The following tabular statement shows the number of colleges in which it would be possible to graduate without instruction in some of the common subjects as listed:

SUBJECTS NOT REQUIRED.

	Number of colleges.		Number of colleges.
Agricultural botany, including plant pathology.....	18	Veterinary science and practice.....	31
Bacteriology.....	8	Farm management.....	7
Zoology.....	9	Fruit growing.....	25
Entomology.....	12	Vegetable growing.....	30
Agricultural chemistry.....	18	Farm mechanics (shopwork).....	27
Organic chemistry.....	16	Farm machinery.....	21
Qualitative analysis (distinct).....	23	Irrigation and drainage.....	35
Quantitative analysis.....	30	Drawing.....	33
Physics (college grade).....	14	Surveying.....	29
Geology.....	21	Economics or sociology.....	6
Genetics (plant or animal breeding).....	8	Mathematics (college).....	18
Poultry husbandry.....	31	Foreign language (college).....	30
Forestry.....	43	Foreign language (either college or high school).....	23



7. The great variation in the distribution of the required work among the various groups or classes of subjects suggests a divergence of views concerning educational aims. There is a tendency among certain institutions during recent years to emphasize the economic and sociological phases of the training, while others place the emphasis upon technical efficiency. The danger lies in a failure to adapt college curricula to the ever-changing economic conditions.

8. In only a few States is any conspicuous attempt being made to consolidate the curricula of the elementary and preparatory schools with the curriculum of the college in such a way as to suggest appropriate sequences embracing the whole period of training for professional agriculture. Such a consolidation contemplates a single and complete program of instruction covering a period of approximately 10 years instead of two or three quite distinct programs of shorter duration.

9. Many colleges still fail to appreciate the importance of requiring a fair degree of proficiency in practical farm operations.

STATISTICAL TABLES.  
TABLE 1.—Form and character of governing boards.

Institutions	Governing body.	Members ex-officio.		Appointed or elected members.		
		Total number of members.	Number.	Official position.	How appointed or elected.	Term, in years.
Alabama Polytechnic Institute.	Board of trustees.	13	2	Governor, State superintendent of education.	By governor.	12
University of Arizona.	Board of regents.	19	2	Governor, State superintendent of public instruction.	do.	4
University of Arkansas.	Board of trustees.	9	2	do.	do.	6
University of California.	Regents of the University of California.	23	7	Governor, Lieutenant governor, or the speaker of assembly.	do.	16
			7	State superintendent of public instruction, president of the State board of agriculture, president of the State board of education, president of the university.	do.	Do.
Colorado Agricultural College.	State board of agriculture.	10	2	Governor, the president of the college.	do.	8
Connecticut Agricultural College.	Board of trustees.	10	1	Governor (president of board).	By the senate.	4
			1		By the State board of agriculture.	1
Delaware College.	do.	32	4	Governor, president of State board of education, master of State grange, president of the college.	20 by board, 8 by governor.	Life.
University of Florida.	Board of control.	5	0		By governor.	4
Georgia State College of Agriculture.	Board of trustees.	11	0		do.	Do.
College of Hawaii.	Board of regents.	5	0		do.	Do.
University of Idaho.	State board of education, board of regents.	6	1	State superintendent of public instruction.	do.	5
University of Illinois.	Board of trustees.	12	3	Governor, superintendent of public instruction, president State board of agriculture.	Elected by people.	6
Purdue University (Ind.).	do.	9	0		By governor.	6

With the approval of the senate.  
Three members must be selected from the board of trustees of the University of Georgia and 3 from board of directors of Georgia Experiment Station.  
Two of the members are nominated by the State board of agriculture, 1 by the State board of horticulture, and 1 by Purdue Alumni Association.

## AMERICAN AGRICULTURAL COLLEGES.

TABLE 1.—Form of character of governing boards—Continued.

Institutions	Governing body	Total number of members	Members ex-officio		Appointed or elected members			
			Number	Official position	Number	How appointed or elected	Term, in years	Political requirements
Iowa State College of Agriculture and Mechanic Arts	State board of education	9	0		9	By governor	6	Not more than 5 members may belong to same party.
Kansas State Agricultural College	Board of administration	4	1	Governor (chairman)	3	do.	4	Appointed without reference to party politics.
University of Kentucky	Board of trustees	32	1	Governor, president of university, superintendent of public instruction, commissioner of agriculture, and the seven members of State board of agriculture.	21	15 by governor; 6 by alumni	6	Board must be bi-partisan.
Louisiana State University and Agricultural and Mechanical College	Board of supervisors	15	3	Governor, State superintendent of public instruction, president of the university.	12	By governor	4	None.
University of Maine	Board of trustees	8	0		8	7 by governor; 1 by alumni	7	Do.
Maryland State College of Agriculture	do.	9	0		9	By governor	9	Do.
Massachusetts Agricultural College	The corporation	18	4	Governor, president of the college, commissioner of education, secretary State board of agriculture.	14	do.	7	Do.
Michigan Agricultural College	State board of agriculture	8	2	President of college, superintendent of public instruction.	6	Elected by the people.	6	Elected on special ticket.
University of Minnesota	Board of regents	12	3	Governor, superintendent of public instruction, president of university.	9	By governor	6	None.
Mississippi Agricultural and Mechanical College	Board of trustees	9	2	Governor, State superintendent of public instruction.	7	do.	6	Do.
University of Missouri	Board of curators	9	0		9	do.	6	Do.
Montana State College of Agriculture and Mechanic Arts	State board of education	11	3	Governor, attorney general, State superintendent public instruction.	8	do.	4	Do.
University of Nebraska	Board of regents	6	0		6	Elected by the people.	6	Elected on party ticket.
University of Nevada	do.	5	0		5	do.	4	do.
New Hampshire College of Agriculture and Mechanic Arts	Board of trustees	13	2	Governor, president of college.	11	9 by governor; 2 by alumni	3	Not more than 5 members may belong to the same party.



College (N. J.)	Board of trustees?	41	3	Governor, chief justice, attorney general.	38	By the board?	Life.	None.
New Mexico College of Agriculture and Mechanical Arts.	Board of regents.	4	2	Governor, superintendent of education, lieutenant governor, speaker of assembly, commissioner of education, commissioner of agriculture, president of State agricultural society, president of university, librarian of university.	5	By governor.	1	Not more than 3 members may be from same party.
Cornell University (N. Y.)	Board of trustees.	40	8	Governor, lieutenant governor, speaker of assembly, commissioner of education, commissioner of agriculture, president of State agricultural society, president of university, librarian of university.	32	By governor, 15 by the board, 10 by the alumni, 1 by bequest.	5	A majority of the members must not be of the same religious sect.
North Carolina College of Agriculture and Engineering.	Board of regents.	17	1	Governor.	16	By governor.	8	None.
North Dakota Agricultural College.	Board of regents.	5	0	Governor.	5	do.	6	Do.
Ohio State University.	Board of trustees.	7	0	Governor.	7	do.	7	Do.
Oklahoma Agricultural and Mechanical College.	State board of agriculture.	5	0	Governor.	5	By governor, 1 elected by people.	4	The president of the board is a salaried official and elected on the party ticket.
Oregon State Agricultural College.	Board of regents.	13	4	Governor, Secretary of State, superintendent of public instruction, master of State gauges.	9	By governor.	9	None.
Pennsylvania State College.	Board of trustees.	31	4	Governor, superintendent of public instruction, president of college, secretary of State board of agriculture.	27	By governor, 9 by alumni, and 12 by delegates representing organized agriculture and industry.	3	None.
University of Porto Rico.	do.	7	3	Commissioner of education (president), speaker of house of delegates, treasurer of Porto Rico.	4	By governor.	Indefinite.	Do.
Rhode Island State College.	Board of managers.	7	1	State commissioner of public schools.	6	By governor, 1 by State board of agriculture.	5	Do.
Clemson Agricultural College (S. C.).	Board of trustees.	13	0	State commissioner of public schools.	13	By governor, designated by bequest and are self-perpetuated.	4	Do.

1 With the approval of the senate.  
 2 The members of the board are salaried officials.  
 3 Nominated by the alumni and appointed by the governor.  
 4 Without the voting privilege.  
 5 One member is appointed for 4 years only.  
 6 The constitution also provides for a board of visitors consisting of 21 members, 1 from each county, appointed by the governor, each for a period of 2 years.  
 7 Five members are appointed by the board upon nomination of the alumni association.  
 8 The oldest liberal male descendant of Ezra Cornell is a trustee during his life.

TABLE 1.—Form and character of governing boards—Continued.

Institutions.	Governing body.	Total number of members.	Members ex-officio.		Appointed or elected members.			
			Number.	Official position.	Number.	How appointed or elected.	Term, in years.	Political requirements.
State College of Agriculture and Mechanic Arts, University of Tennessee	Regents of education.	5	0		5	By governor <sup>1</sup>	6	Must be selected from the different political parties of the State.
	Board of trustees.	18	4	Governor, superintendent of public instruction, commissioner of agriculture, president of university.	14	do.	12	1 member must be selected from each of the four congressional districts; one from each of the cities Knoxville and Memphis.
Agricultural and Mechanical College of Texas.	Board of directors.	9	0		9	do.	6	None.
Agricultural College of Utah.	Board of trustees.	13	1	Secretary of State.	12	do.	4	Do.
University of Vermont and State Agricultural College.	do.	20	2	Governor, president of university.	18	By the legislature.	9 for 6 years.	Do.
Virginia Agricultural and Mechanical College and Polytechnic Institute.	Board of visitors.	10	2	Superintendent of public instruction, president of board of agriculture and immigration.	8	By governor.	4	Do.
State College of Washington.	Board of regents.	5	0	( <sup>1</sup> )	5	do.	6	Do.
West Virginia University.	Board of control. <sup>2</sup>	3	0		3	do.	6	Not more than 2 from dominant political party.
	Board of regents.	5	1	Superintendent of public free schools. <sup>3</sup>	4	do.	4	Not more than 3 from dominant political party.
University of Wisconsin.	do.	15	2	President of university, superintendent of public instruction.	13	do.	6	1 member per congressional district and 2 at large; 2 members must be women.
University of Wyoming.	Board of trustees.	11	2	President of college, superintendent of public instruction. <sup>4</sup>	9	do.	6	None.

1. With the approval of the senate.
2. The president of the college is ex officio secretary of the board without a vote. The governor of the State is regarded as advisory member ex officio.
3. The business affairs of the university are under the board of control and the academic affairs are under the board of regents.
4. The members of the board are salaried officers.
5. The superintendent of public free schools is elected by the people on the regular party ticket.
6. Without the voting privilege.

TABLE 2.—Agricultural curricula offered by the land-grant colleges.

The offering of curricula requiring one or more scholastic years is indicated by listing the corresponding degrees or certificates, and the offering of one of the shorter curricula is indicated by listing the subject and the duration.

Institutions.	Graduate work.	Four-year curricula.	Three-year curricula.	Two-year curricula.	One-year curricula.	Short curricula.	Sum-mer session.
Alabama Polytechnic Institute.....	M. S.	B. S.		Certificate.		General agriculture.....	12
University of Arizona.....	M. S.	B. S.		do.		do.....	6
University of Arkansas.....	M. S., Ph. D.	B. S.	Certificate.			Dairy manufacturing.....	6
University of California.....						Poultry.....	6
						Creamery.....	4
						Dairy.....	2
						Butter.....	2
						Cheese.....	2
						Tractors.....	2
Colorado Agricultural College.....		B. S.	do.	Certificate.		Dairying.....	12
Connecticut Agricultural College.....		B. S.				Poultry.....	6
Delaware College.....	M. S.	B. S.		do.		General agriculture.....	10
University of Florida.....	M. S. A.	B. S. A.		G. F. <sup>1</sup>	Certificate.	do.....	6
Georgia State College of Agriculture.....	M. S. Agr.	B. S. Agr., B. S. For.		do.	do.	do.....	12
College of Agriculture and Mechanic Arts of the Territory of Hawaii.....	M. S. A.	B. S.				do.....	2
University of Idaho.....	M. S. Agr., D.	B. S. Agr.	Certificate.			Dairying.....	20
University of Illinois.....	M. S., Ph. D.	B. S.				General agriculture.....	2
Purdue University (Ind.).....	M. S. A.	B. S. A.		Certificate.		do.....	8
Iowa State College of Agriculture and Mechanic Arts.....	M. S. In Agr., M. S. In For.	B. S. In (any major subject).		Certificate.	Certificate.	Dairying.....	2
Kansas State Agricultural College.....	M. S.	B. S.	Certificate.	do.		do.....	8
University of Kentucky.....	M. S. Agr.	B. S. Agr.				General agriculture.....	16
Land Grant University and Agricultural and Mechanical College.....	M. S.	B. S.				do.....	2
University of Maine.....	M. S.	B. S.		Certificate.		do.....	6
Maryland State College of Agriculture.....	M. S.	B. S.		do.		do.....	6
Massachusetts Agricultural College.....	M. S., M. Agr., Ph. D., D. Agr.	B. S.		do.		bee keeping.....	2
						General agriculture.....	10

<sup>1</sup> Curricula shorter than 10 days' duration are not listed.

<sup>2</sup> Graduate in farming.



## AMERICAN AGRICULTURAL COLLEGES.

TABLE 2.—Agricultural curricula offered by the land-grant colleges—Continued.

The offering of curricula requiring one or more scholastic years is indicated by listing the corresponding degrees or certificates, and the offering of one of the shorter curricula is indicated by listing the subject and the duration.

Institutions.	Graduate work.	Four-year curricula.	Three-year curricula.	Two-year curricula.	One-year curricula.	Short curricula.	Sum- mer session.
Michigan Agricultural College.	M. S., M. Agr., M. Hort., M. For.	B. S.		Certificate		General agriculture. Hicks 8	Hicks 6
University of Minnesota.	M. S., Ph. D.	B. S.	Certificate			Dairying Hicks 4	6
Mississippi Agricultural and Mechanical College.	M. S., A. M., Ph. D.	B. S., in Agr., B. S., in For.		Certificate		Traction engine Hicks 5	6
University of Missouri.	M. S.	B. S.	Certificate	do.		Reamery Hicks 7	8
Montana State College of Agriculture and Me- chanic Arts.	M. S.	B. S.					6
University of Nebraska.	M. S., Agr. Eng., M. S., in Agr. Eng., Ph. D.	B. S.		Certificate		General agriculture. Hicks 10	8
University of Nevada.	M. S.	B. S.		Certificate		Dairying Hicks 5	6
New Hampshire College of Agriculture and Me- chanic Arts.	M. S.	B. S.				Dairy farming Hicks 12	6
Rutgers College (N. J.).	M. Sc., Ph. D.	B. S.				Horticulture Hicks 12	12
New Mexico College of Agriculture and Me- chanic Arts.	M. S.	B. S.				Poultry Hicks 12	12
Cornell University (N. Y.).	M. S., A. M., S. For., M. L., D., Ph. D.	B. S.				Bee husbandry Hicks 12	12
						General agriculture Hicks 6	0
						do. Hicks 12	6
						Dairy Hicks 12	12
						Poultry Hicks 12	12
						Flowers Hicks 12	12
						Vegetables Hicks 12	12
						General agriculture Hicks 4	4
North Carolina College of Agriculture and Engineering.	M. S.	B. S.	Certificate	Certificate	Certificate	do. Hicks 10	0
North Dakota Agricultural College.	M. S.	B. S.	do.			do. Hicks 10	0
Ohio State University.	M. S., Ph. D.	B. S.				Dairying Hicks 8	8
						Poultry Hicks 8	8
Oklahoma Agricultural and Mechanical College.	M. S.	B. S.	do.			Forestry Hicks 20	6
Oregon State Agricultural College.	M. S.	B. S.			Certificate	General agriculture Hicks 4	6
Pennsylvania State College.	M. S.	B. S.	Certificate	Certificate		do. Hicks 12	6
University of Porto Rico.	M. S.	B. S.				Poultry Hicks 6	0
Rhode Island State College.	M. S.	B. S.					0

Clemson Agricultural College (S. C.).....	B. S.				General agriculture.....	24	4
South Dakota State College of Agriculture and Mechanics Arts.....	M. S.	(2)			Cotton grading.....	24	
University of Tennessee.....	B. S.				Corn growing.....	12	6
Agricultural and Mechanical College of Texas.....	B. S. A.				Tractor engine.....	20	6
	B. S.				General agriculture.....	8	0
Agricultural College of Utah.....	B. S.				Cotton classing.....	2	6
University of Vermont and State Agricultural College.....	M. S.				Butter making.....	18	6
Virginia Agricultural and Mechanical College and Polytechnic Institute.....	M. S.				General agriculture.....	5	6
State College of Washington.....	M. S. Agr.				Creamery.....	4	6
West Virginia University.....	M. S., Ph. D.				General agriculture.....	6	8
University of Wisconsin.....	M. S.				do.....	12	6
University of Wyoming.....	B. S.				Dairying.....	10	6

<sup>1</sup> Master landscape design.      <sup>2</sup> Given during the summer.      <sup>3</sup> A secondary curriculum covering four years of five months each, leading to a certificate.

## AMERICAN AGRICULTURAL COLLEGES.

TABLE 3.—Major options and opportunities for specialization in the four-year agricultural curricula.

[Each opportunity for specialization is represented by a cross X.]

Institutions.	Agriculture (general).	Agricultural education.	Agricultural engineering or farm mechanics.	Agricultural journalism.	Agronomy or farm crops.	Animal husbandry.	Bacteriology or micro-biology.	Biology or economic biology.	Botany or plant pathology.	Chemistry or agricultural chemistry.	Dairy husbandry.	Dairy industries.	Entomology or zoology.	Farm management.	Floriculture.	Forestry.	Genetics or plant breeding.	Horticulture.	Landscape gardening.	Utericulture or vegetable gardening.	Pomology or fruit growing.	Poultry husbandry.	Rural economics, marketing, etc.	Soils and fertilizers.	Veterinary science.	Miscellaneous.
Alabama Polytechnic Institute.																										
University of Arizona.																										
University of Arkansas.																										
University of California.																										
Colorado Agricultural College.																										
Connecticut Agricultural College.																										
Delaware College.																										
University of Florida.																										
Georgia State College of Agriculture and Mechanic Arts of the Territory of Hawaii.																										
University of Idaho.																										
Purdue University (Ind.).																										
Iowa State College of Agriculture and Mechanic Arts.																										
Kansas State College of Agriculture and Mechanic Arts.																										
Louisiana State University and Agricultural and Mechanical College.																										
University of Maine.																										
Maryland State College of Agriculture.																										
Massachusetts Agricultural College.																										
Michigan Agricultural College.																										
University of Minnesota.																										
Mississippi Agricultural and Mechanical College.																										
University of Missouri.																										
Montana State College of Agriculture and Mechanic Arts.																										
University of Nebraska.																										
University of Nevada.																										
New Hampshire College of Agriculture and Mechanic Arts.																										
New York State College of Agriculture and Mechanic Arts.																										
New Mexico College of Agriculture and Mechanic Arts.																										



	10	25	17	2	43	41	7	5	19	24	31	4	17	7	8	14	3	36	11	9	10	15	9	13	12	10
Cornell University (N. Y.)																										
North Carolina College of Agriculture and Engineering																										
Ohio State University																										
Oklahoma Agricultural and Mechanical College																										
Oregon State Agricultural College																										
Pennsylvania State College																										
University of Porto Rico																										
Rhode Island State College																										
Clemson Agricultural College (S. C.)																										
South Dakota State College of Agriculture																										
University of Tennessee																										
Agricultural and Mechanical College of Texas																										
Agricultural College of Utah																										
University of Vermont and State Agricultural College																										
Virginia Agricultural and Mechanical College and Poly-																										
technic Institute																										
State College of Washington																										
West Virginia University																										
University of Wisconsin																										
University of Wyoming																										
Frequency	10	25	17	2	43	41	7	5	19	24	31	4	17	7	8	14	3	36	11	9	10	15	9	13	12	10

In the tabulations, separate agricultural curricula, major options, and opportunities for specialization are counted. In a few institutions, through a liberal elective system, opportunity for specialization is offered in any phase of agriculture in which instruction is offered.

## AMERICAN AGRICULTURAL COLLEGES.

TABLE 4.—Requirements for admission.

Institutions.	Age require- ments.		Scholastic requirements.										Conditional admission.		
	For regular students.	For special students.	Entrance units required.	Prescribed units.								Optional units.	Number of deficient units approved.	Time for removal of con- ditions (years).	
				English.	Foreign language.	History or social science.	Algebra.	Geometry.	Advanced arithmetic.	Mathematics.	Physics.				Science.
Alabama Polytechnic Institute.....	15	21	14	3	2	1	14	13	1	1	1	1	19	3	2
University of Arizona.....	16	21*	13	3	2	1	14	13	1	1	1	1	19	3	2
University of Arkansas.....	(*)	18	14	3	2	1	14	13	1	1	1	1	19	3	2
University of California.....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Colorado Agricultural College.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Connecticut Agricultural College.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Delaware College.....	16	21	14	3	2	2	14	13	1	1	1	1	19	3	2
University of Florida.....	16	21	14	3	2	2	14	13	1	1	1	1	19	3	2
Georgia State College of Agriculture.....	16	21	16	3	2	2	14	13	1	1	1	1	19	3	2
College of Agriculture and Mechanic Arts of the University of Hawaii.....	16	20	14	3	2	2	14	13	1	1	1	1	19	3	2
University of Idaho.....	(*)	18	15	3	2	2	14	13	1	1	1	1	19	3	2
Purdue University (Ind.).....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Iowa State College of Agriculture and Mechanic Arts.....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Kansas State Agricultural College.....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Kentucky.....	14	21	15	3	2	2	14	13	1	1	1	1	19	3	2
Louisiana State University and Agricultural and Mechanical College.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Maine.....	16	21	14	3	2	2	14	13	1	1	1	1	19	3	2
Maryland State College of Agriculture.....	(*)	21	14	3	2	2	14	13	1	1	1	1	19	3	2
Massachusetts Agricultural College.....	(*)	18	15	3	2	2	14	13	1	1	1	1	19	3	2
Michigan Agricultural College.....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Minnesota.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Missouri.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Montana and Mechanical College.....	16	20	12	3	2	2	14	13	1	1	1	1	19	3	2
University of Nebraska.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of North Carolina.....	16	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Oklahoma.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Oregon.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Pennsylvania.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Tennessee.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Texas.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Vermont.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Virginia.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Washington.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Wisconsin.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2
University of Wyoming.....	(*)	21	15	3	2	2	14	13	1	1	1	1	19	3	2

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University of Nevada.....	(*)	20	15	3	1	23	2	84	1	64	(*)	2	1
New Hampshire College of Agriculture and Mech-	(*)	(*)	15	3	1	1	1	7	8	4	(*)	1	(*)
Rutgers College (N. J.).....	(*)	(*)	15	3	2	1	1	104	43	4	(*)	2	1
New Mexico College of Agriculture and Mechanic	(*)	(*)	15	4	1	1	1	9	6	4	(*)	2	1
Arts.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Cornell University (N. Y.).....	3 16	121	15	3	3	1	1	9	6	4	(*)	2	1
North Carolina College of Agriculture and Engineer-	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
ing.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
North Dakota Agricultural College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Ohio State University.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Oklahoma Agricultural and Mechanical College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Oregon State Agricultural College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Pennsylvania State College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Toronto.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of California.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Illinois.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Michigan.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Minnesota.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Wisconsin.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Wyoming.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Nevada.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
New Hampshire College of Agriculture and Mech-	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Rutgers College (N. J.).....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
New Mexico College of Agriculture and Mechanic	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Arts.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Cornell University (N. Y.).....	3 16	121	15	3	3	1	1	9	6	4	(*)	2	1
North Carolina College of Agriculture and Engineer-	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
ing.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
North Dakota Agricultural College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Ohio State University.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Oklahoma Agricultural and Mechanical College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Oregon State Agricultural College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
Pennsylvania State College.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Toronto.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of California.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Illinois.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Michigan.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Minnesota.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Wisconsin.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1
University of Wyoming.....	(*)	(*)	15	3	3	1	1	9	6	4	(*)	2	1

- \* In some cases agriculture is accepted as science.
- \* Women students must be at least 17 years of age.
- \* Practically no limit to the number of elective units that may be offered in vocational subjects.
- \* No stated limit, or each case is considered on its own merits.
- \* Students who are deficient in entrance units may enter the "school of agriculture" where opportunity to make up deficiencies is afforded.
- \* Entrance requirements are not based upon high-school units.
- \* History and science may be offered in place of a foreign language.
- \* Applicants presenting a total of 15 units, but deficient in foreign language, may be admitted.
- \* Only applicants deficient in physics are admitted with conditions.
- \* Agriculture may be included.
- \* Applicants must present a total of 15 units, including 3 in English, 1 in algebra, 1 in geometry, and 1 in science.
- \* Applicants are accepted conditionally "only in exceptional cases."
- \* Agriculture may be substituted for foreign language.
- \* Applicants who meet the total requirements, but who are deficient in some of the prescribed work, may be admitted conditionally.
- \* Four units of foreign language may be substituted for the fourth unit of English.
- \* Only applicants deficient in geometry are admitted with conditions.
- \* Applicants who meet regular entrance requirements are admitted at 16 years of age.
- \* A great variety of combinations of these units may be accepted. The English requirement is fixed, but three units may be offered in any one of the other four required subjects.
- \* Four units may be offered in any one of the remaining three subjects; and one unit in each of the remaining two subjects.
- \* Required subjects.
- \* One unit for approved occupational experience may be offered.
- \* One unit in physical science may be offered in place of the second unit of mathematics.

TABLE 5.—Comparing the 1912-13 requirements for admission with those of 1917-18.

Institutions.	Years of high-school work.		Entrance units.		Prescribed units.	
	1912-13	1917-18	1912-13	1917-18	1912-13	1917-18
Alabama Polytechnic Institute.....	3	4	12	14	7	7½
University of Arizona.....	4	4	15	15	10	7½
University of Arkansas.....	4	4	13	14	8	7½
University of California.....	4	4	15	15	10	9
Colorado Agricultural College.....	4	4	15	15	9	9
Connecticut Agricultural College.....	2	4	8	14		
Delaware College.....	2½	4	10	14	9½	9½
University of Florida.....	3	4	12	16	10	10
Georgia State College of Agriculture.....	4	4	14	14	7½	9½
College of Agriculture and Mechanic Arts of the Territory of Hawaii.....	4	4	15	15	10	6½
University of Idaho.....	4	4	15	15	9½	9
University of Illinois.....	4	4	15	15	7½	7
Purdue University (Ind.).....	4	4	15	15	9½	9½
Iowa State College of Agriculture and Mechanic Arts.....	4	4	15	15	8½	6½
Kansas State Agricultural College.....	2	4	8	15	5	6
University of Kentucky.....	4	4	15	15	9½	9½
Louisiana State University and Agricultural and Mechanical College.....	4	4	14	14	6½	6½
University of Maine.....	4	4	14	14½	9½	9½
Maryland State College of Agriculture.....	1½	4	6	15	6	10½
Massachusetts Agricultural College.....	4	4	11	14	9	8½
Michigan Agricultural College.....	4	4	15	15	7	5
University of Minnesota.....	4	4	15	15	6	6
Mississippi Agricultural and Mechanical College.....	1	2½	5	10	3	5½
University of Missouri.....	4	4	15	15	4	4
Montana State College of Agriculture and Mechanic Arts.....	4	4	15	15	10	7
University of Nebraska.....	4	4	15	15	8½	6
University of Nevada.....	4	4	15	15	4	8½
New Hampshire College of Agriculture and Mechanic Arts.....	4	4	15	15	11½	7
Rutgers College (N. J.).....	3+	4	14	15	11	10½
New Mexico College of Agriculture and Mechanic Arts.....	4	4	15	15	10	9
Cornell University (N. Y.).....	4	4	16	15	9	9
North Carolina College of Agriculture and Engineering.....	1	3	4	11	3	8½
North Dakota Agricultural College.....	4	4	14	15	8	10
Ohio State University.....	3	4	12	15	10	8
Oklahoma Agricultural and Mechanical College.....	2	4	8	15	8	7
Oregon State Agricultural College.....	2	4	9	15	4½	5
Pennsylvania State College.....	4	4	14	15	12	10
University of Porto Rico.....	4	4	14	14	7½	
Rhode Island State College.....	4	4	14	14	8½	9
Clemson Agricultural College (S. C.).....	2	3	8	11	8	7
South Dakota State College of Agriculture and Mechanic Arts.....	4	4	14	15	10	8
University of Tennessee.....	4	4	14	14	8	8
Agricultural and Mechanical College of Texas.....	1	4	4	14	4	5½
Agricultural College of Utah.....	3	4	11	16		9
University of Vermont and State Agricultural College.....	4	4	14½	14½	9½	9½
Virginia Agricultural and Mechanical College and Polytechnic Institute.....	2½	4	10	14	7	8
State College of Washington.....	4	4	15	15	7½	6
West Virginia University.....	4	4	14	15	9	9
University of Wisconsin.....	4	4	14	14	6	6
University of Wyoming.....	4	4	15	15	9½	10
Median.....	4	4	14	15	8½	8



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TABLE 6.—Maximum and minimum entrance credit allowed for the various high-school subjects.  
 [Whenever the credit value is expressed by one figure only, it is listed in the maximum column, except where the contrary meaning is obvious.]

Institutions.	Language.						Mathematics.						Natural science.										
	English.	Latin.	Greek.	French.	German.	Spanish.	Other languages.	Non-specified foreign languages.	Algebra.	Plane geometry.	Solid geometry.	Trigonometry.	Advanced algebra.	Non-specified mathematics.	Physics and geology.	Physics.	Chemistry.	Botany.	Zoology.	Physiology.	General biology.	General science.	Non-specified science.
Alabama Polytechnic Institute.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Arizona.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Arkansas.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of California.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colorado Agricultural College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Connecticut Agricultural College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Florida.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Georgia State College of Agriculture.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
College of Agriculture and Mechanic Arts of the Territory of Hawaii.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Idaho.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Illinois.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Purdue University (Ind.).....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Iowa State College of Agriculture and Mechanic Arts.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kansas State Agricultural College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Kentucky.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Louisiana State University and Agricultural and Mechanical College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Maine.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maryland State College of Agriculture.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Massachusetts Agricultural College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Michigan Agricultural College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Minnesota.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Missouri.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mississippi Agricultural and Mechanical College.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Montana State College of Agriculture and Mechanic Arts.....	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

\* Units to be determined.

† The Unit credit system is not employed.

TABLE 6.—Maximum and minimum entrance credit allowed for the various high-school subjects—Continued.  
[Whenever the credit value is expressed by one figure only, it is listed in the maximum column, except where the contrary meaning is obvious.]

Institutions.	Language.				Mathematics.										Natural science.									
	English.	Latin.	Greek.	French.	German.	Spanish.	Other languages.	Unspecified for other languages.	Algebra.	Plane geometry.	Solid geometry.	Trigonometry.	Advanced algebra.	Non-specified mathematics.	Physiography and geology.	Physics.	Chemistry.	Botany.	Zoology.	Physiology.	General biology.	General science.	Unspecified science.	
University of Nebraska	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	
University of Nevada	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	
New Hampshire College of Agriculture and Mechanic Arts.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Rutgers College (N. J.)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
New Mexico College of Agriculture and Mechanic Arts.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Cornell University (N. Y.)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
North Carolina College of Agriculture and Engineering	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
North Dakota Agricultural College.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Ohio State University	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Oklahoma Agricultural and Mechanical College	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Oregon State Agricultural College.	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Pennsylvania State College	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
University of Porto Rico	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Rhode Island State College	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Clemson Agricultural College (S. C.)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
South Dakota State College of Agriculture and Mechanic Arts	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
University of Tennessee	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Agricultural and Mechanical College of Texas	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Agricultural College of Utah	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
University of Vermont and State Agricultural College	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Virginia Agricultural and Mechanical College and Polytechnic Institute	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
State College of Washington	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
West Virginia University	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
University of Wisconsin	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
University of Wyoming	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	

Units to be determined.

# REQUIREMENTS FOR ADMISSION.

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Institutions.	History and social science.										Vocational subjects.										Normal training.					
	Greek and Roman history.	Medieval and modern history.	English history.	American history.	General history.	Economics and sociology.	Civics.	Non-specified social science.	Agriculture.	Drawing, art and design.	Drawing, mechanical.	Manual training or shop work.	Domestic science.	Domestic art.	Commercial law.	Commercial geography.	Bookkeeping and business arithmetic.	Stenography and typewriting.	Music.	Non-specified vocational subjects.		Minimum.	Maximum.	Minimum.	Maximum.	Minimum.
Alabama Polytechnic Institute.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Arizona.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Arkansas.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of California.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colorado Agricultural College.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Connecticut Agricultural College.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Delaware College.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Florida.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Georgia State College of Agriculture.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
College of Agriculture and Mechanic Arts of the Territory of Hawaii.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Idaho.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Illinois.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Purdue University (Ind.).	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Iowa State College of Agriculture and Mechanic Arts.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kansas State Agricultural College.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

1 Domestic art sometimes is included.

2 Units to be determined.

3 Additional units may be offered for subjects commonly taught in high schools.



## AMERICAN AGRICULTURAL COLLEGES.

TABLE 6.—Maximum and minimum entrance credit allowed for the various high-school subjects—Continued.

Institutions.	History and social sciences.										Vocational subjects.																Normal training, etc.		
	Maximum.	Minimum.	Medieval and modern history.	English history.	American history.	General history.	Economics and sociology.	Civics.	Non-specified social sciences.	Agriculture.	Drawing, etching and designing.	Drawing.	Manual training or shop work.	Domestic science.	Domestic art.	Commercial law.	Commercial geography.	Bookkeeping and business arithmetic.	Stenography and typewriting.	Music.	Non-specified vocational subjects.	Maximum.	Minimum.	Maximum.	Minimum.	Maximum.		Minimum.	Pedagogy, psychology, etc.
University of Kentucky	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Louisiana State University and Agricultural and Mechanical College	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Maine	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Massachusetts College of Agriculture	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Massachusetts Agricultural College	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Michigan Agricultural College	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Minnesota	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Missouri	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Nebraska	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
University of Nevada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Hampshire College of Agriculture and Mechanical Arts	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Staten College (N. J.)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Mexico College of Agriculture and Mechanical Arts	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



[illegible]

A statement made a man be offered for subjects commonly taught in high schools.

TABLE 7.—Frequency of occurrence of the various high-school subjects accepted for admission.

Subjects.	Institu- tions ac- cepting.	Subjects.	Institu- tions ac- cepting.
English.....	49	Greek and Roman history.....	40
Latin.....	40	Medieval and modern history.....	40
Greek.....	40	English history.....	40
French.....	40	American history.....	40
German.....	40	General history.....	40
Spanish.....	38	Economics and sociology.....	7
Other languages.....	5	Civics.....	13
Algebra.....	42	Agriculture.....	18
Plane geometry.....	42	Drawing, art, and designing.....	35
Solid geometry.....	38	Drawing, mechanical.....	33
Trigonometry.....	31	Manual training or shopwork.....	18
Advanced algebra.....	27	Domestic science <sup>1</sup> .....	34
Physiography and geology.....	37	Domestic art.....	21
Physics.....	42	Commercial law.....	40
Chemistry.....	39	Commercial geography.....	10
Botany.....	41	Bookkeeping and business arithmetic.....	16
Zoology.....	38	Stenography and typewriting.....	27
Physiology.....	31	Music.....	19
General biology.....	18	Pedagogy, psychology, etc.....	10
General science.....	8		9

<sup>1</sup> Domestic art sometimes is included.

# REQUIREMENTS FOR GRADUATION.

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TABLE 8.—The practice of the institutions in awarding collegiate credit.

Institutions.	Terms in college session.	Unit of collegiate credit: S. H. = Semester-hour. T. H. = Term-hour. Y. H. = Year-hour.	Duration of a one-credit recitation period.	Duration of a one-credit laboratory period.	Credit hours per week required. <sup>1</sup>	
					Minimum.	Maximum.
			Minutes.	Hours.		
Alabama Polytechnic Institute	3	T. H.	60	1	(?)	(?)
University of Arizona	3	S. H.	50	2	12	19
University of Arkansas	2	S. H.	50	2	12	19
University of California	2	S. H.	50	2	12	19
Colorado Agricultural College	2	S. H.	50	2	(?)	(?)
Connecticut Agricultural College	2	S. H.	50	2	(?)	(?)
Delaware College	2	S. H.	50	2	16	20
University of Florida	2	S. H.	50	2	16	23
Georgia State College of Agriculture	3	Y. H.	50	2		
College of Agriculture and Mechanic Arts of the Territory of Hawaii	2	S. H.	50	2	(?)	(?)
University of Idaho	2	S. H.	50	2	12	19
University of Illinois	2	S. H.	50	2	15	18
Purdue University (Ind.)	2	S. H.	50	2	(?)	(?)
Iowa State College of Agriculture and Mechanic Arts	2	S. H.	50	3		
Kansas State Agricultural College	2	S. H.	50	3	(?)	(?)
University of Kentucky	2	S. H.	50	2	12	18
Louisiana State University and Agricultural and Mechanical College	2	S. H.	50	2	(?)	(?)
University of Maine	2	S. H.	50	2	17	22
Maryland State College of Agriculture	3	T. H.	50	2	(?)	(?)
Massachusetts Agricultural College	3	T. H.	50	2	16	21
Michigan Agricultural College	2	T. H.	50	2	18	23
University of Minnesota	2	S. H.	50	2	15	18
Mississippi Agricultural and Mechanical College	3	T. H.	50	2	20	25
University of Missouri	2	S. H.	50	2	12	18
Montana State College of Agriculture and Mechanic Arts	2	S. H.	60	2	12	19
University of Nebraska	2	S. H.	50	3	12	18
University of Nevada	2	S. H.	50	2	10	18
New Hampshire College of Agriculture	2	S. H.	50	2	(?)	(?)
Rutgers College (N. J.)	2	S. H.	50	2	(?)	(?)
New Mexico College of Agriculture and Mechanic Arts	2	S. H.	50	2	18	23
Cornell University (N. Y.)	2	S. H.	50	2	12	18
North Carolina College of Agriculture and Engineering	2	S. H.	50	2	(?)	(?)
North Dakota Agricultural College	3	T. H.	50	2	15	20
Ohio State University	2	S. H.	55	3		
Oklahoma Agricultural and Mechanical College	2	S. H.	50	3	12	20
Oregon State Agricultural College	2	S. H.	50	2	13	21
Pennsylvania State College	2	S. H.	50	2	18	21
University of Porto Rico	2	S. H.	50	2		
Rhode Island State College	2	S. H.	50	2		
Clemson Agricultural College (S. C.)	3	T. H.	50	1		
South Dakota State College of Agriculture and Mechanic Arts	2	S. H.	50	2	14	20
University of Tennessee	2	S. H.	50	2	12	18
Agricultural and Mechanical College of Texas	3	S. H.	50	2	16	24
Agricultural College of Utah	3	S. H.	50	2	15	19
University of Vermont and State Agricultural College	2	S. H.	50	2		
Virginia Agricultural and Mechanical College and Polytechnic Institute	3	T. H.	50	1	(?)	(?)
State College of Washington	2	S. H.	50	2	15	20
West Virginia University	2	S. H.	50	2	15	20
University of Wisconsin	2	S. H.	50	2	16	20
University of Wyoming	2	S. H.	50	3	14	18

<sup>1</sup> In most cases the minimum and maximum requirements per week include the work in military and physical drill, but this point is not always stated definitely.

<sup>2</sup> Minimum requirements are according to term schedule.

<sup>3</sup> Not more than five actual hours per week in excess of the scheduled number may be carried without special permission.

<sup>4</sup> Not more than two hours in excess of the term schedule.



TABLE 9.—Requirements for graduation—PART I: Languages, mathematics, political and social science, education.

(The use of italics indicates that a limited number of courses may be substituted for the one listed.)

Institutions.	Languages.						Political and social science.						All nontechnical subjects.									
	Foreign language.		English composition and rhetoric.		English literature.		Argumentation and public speaking.		Mathematics.		History and civil government.		Economics and sociology (general).		Rural economics and rural sociology.		Psychology and education.		Freshman.	Sophomore.	Junior.	Senior.
	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.				
Alabama Polytechnic Institute	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	24	24	6	74
University of Arizona	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	13	4	4	10
University of Arkansas	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6	4	6	6
University of California	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Colorado Agricultural College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Connecticut Agricultural College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Dartmouth College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Delaware College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Florida State College of Agriculture	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Georgia State College of Agriculture	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
College of Agriculture and Mechanic Arts of the Territory of Hawaii	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Idaho	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Illinois	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Purdue University (Ind.)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Iowa State College of Agriculture and Mechanic Arts	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Kansas State Agricultural College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Kentucky	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Maryland	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Louisiana State University and Agricultural and Mechanical College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Maine	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Maryland State College of Agriculture	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Massachusetts Agricultural College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Michigan Agricultural College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Minnesota	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
Mississippi State College of Agriculture and Mechanical College	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4
University of Missouri	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	12	6	6	4



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<sup>1</sup>Includes library practice and journalism.  
<sup>2</sup>Includes other phases of English.  
<sup>3</sup>Journalism.  
<sup>4</sup>Based only upon the institutions listing requirements in the subject.

## AMERICAN AGRICULTURAL COLLEGES.

TABLE 9.—Requirements for graduation—PART II: Agronomy, horticulture.  
[The use of italics indicates that a limited number of courses may be substituted for the one listed.]

Institutions.	Agronomy and soils.												Horticulture.														
	Field and forage crops.				Soils (general).				Soil fertility and management (including fertilizers).				Farm management (including farm accounts).		General agronomy (including thesis and seminar).		Plant propagation.		Pomology.		Olericulture.		Landscape or ornamental gardening.		General horticulture.		
	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.	Sophomore.	Freshman.
Alabama Polytechnic Institute.	3	4	23	10	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Arizona.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Arkansas.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of California.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Colorado Agricultural College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Connecticut Agricultural College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Delaware College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Florida.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Georgia State College of Agriculture.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
College of Agriculture and Mechanic Arts of the Territory of Hawaii.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Idaho.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Illinois.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Purdue University (Ind.).	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Iowa State College of Agriculture and Mechanic Arts.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Kansas State Agricultural College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Kentucky.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Louisiana State University and Agricultural and Mechanical College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Maine.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Maryland State College of Agriculture.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Massachusetts Agricultural College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
Michigan Agricultural College.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1
University of Minnesota.	3	4	6	6	44	6	6	6	44	6	6	6	1	3	4	3	23	4	3	3	4	3	11	11	1	1	1

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Based only upon the institutions' listing requirements in the subject.

Includes judging and testing grain.

**Includes:**



TABLE 9.—Requirements for graduation—PART III: *Agricultural engineering, genetics.*  
 [The use of italics indicates that a limited number of courses may be substituted for the one listed.]

Institutions.	Agricultural engineering.												Genetics.																			
	Farm mechanics (shop work).			Farm machinery (including motors and engines).			Rural architecture.			Irrigation and drainage.			Surveying, platting, etc.			Drawing.			General agricultural engineering.			Animal breeding.			Plant breeding and crop improvement.			General genetics.				
	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.	Freshman.	Sophomore.	Junior.	Senior.
Alabama Polytechnic Institute.	6																															
University of Arizona.	3																															
University of Arkansas.	3																															
University of California.	4																															
Colorado Agricultural College.	4																															
Connecticut Agricultural College.	2																															
Delaware College.	2																															
University of Florida.	4																															
Georgia State College of Agriculture.																																
College of Agriculture and Mechanical Arts of the Territory of Hawaii.																																
University of Idaho.	11	3																														
University of Illinois.	3																															
Purdue University (Ind.).	4																															
Iowa State College of Agriculture and Mechanic Arts.	3																															
Kansas State Agricultural College.	3																															
University of Kentucky.	5																															
Louisiana State University and Agricultural and Mechanical College.	3																															
University of Maine.	8	6																														
Maryland State College of Agriculture.	11																															
Massachusetts Agricultural College.	4																															
Michigan Agricultural College.	11																															
University of Minnesota.	4																															
Mississippi Agricultural and Mechanical College.	11																															

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a. Based only upon the institutions listing requirements in the subject.

TABLE 9.—Requirements for graduation—PART IV: Animal husbandry, forestry, general agriculture, all technical subjects.

[The use of italics indicates that a limited number of courses may be substituted for the one listed.]

Institutions.	Animal husbandry.										Forestry.	General agriculture (including farm practice.)				Total technical subjects.						
	Breeds and types of livestock (including stock judging.)					Feeding and management of livestock.			Dairy husbandry and dairy industries.			Poultry husbandry.		Veterinary science and practice.			General animal husbandry.					
	Freshman.	Sophomore.	Junior.	Senior.		Freshman.	Sophomore.	Junior.	Senior.	Freshman.		Sophomore.	Junior.	Senior.	Freshman.		Sophomore.	Junior.	Senior.			
Alabama Polytechnic Institute.....	2	2	2	2															14	9	20	22
University of Arizona.....	3	3	3	3															3	3	10	12
University of Arkansas.....	3	3	3	3															15	12	15	22
University of California.....	2	2	2	2															11	16	12	20
Colorado Agricultural College.....	2	2	2	2															14	11	14	10
Connecticut Agricultural College.....	3	3	3	3															9	9	9	14
Dartmouth College.....	2	2	2	2															4	1	8	12
Duquesne University.....	2	2	2	2															18	12	12	24
Georgia State College of Agriculture.....	3	3	3	3															10	5	10	18
College of Agriculture and Mechanic Arts of the Territory of Hawaii.....	3	3	3	3															13	14	17	10
University of Idaho.....	3	3	3	3															10	8	26	15
University of Illinois.....	3	3	3	3															16	24	15	18
Purdue University (Ind.).....	5	5	5	5															12	24	19	18
Louisiana State College of Agriculture and Mechanic Arts.....	5	5	5	5															1	1	2	17
Kansas State Agricultural College.....	5	5	5	5															2	2	14	17
University of Kentucky.....	5	5	5	5															3	3	6	13
Louisiana State University and Agricultural and Mechanical College.....	5	5	5	5															16	12	30	18
University of Maine.....	5	5	5	5															3	3	18	16
Maryland State College of Agriculture.....	2	2	2	2															2	2	24	34
Massachusetts Agricultural College.....	2	2	2	2															14	24	34	61
Michigan Agricultural College.....	2	2	2	2															2	2	10	20
University of Minnesota.....	2	2	2	2															3	3	12	24
Mississippi Agricultural and Mechanical College.....	3	3	3	3															23	23	3	31
University of Missouri.....	3	3	3	3															2	2	6	11



[illegible]

<sup>1</sup> Represents credit for summer practice.  
<sup>2</sup> This represents credit for elective agricultural work.  
<sup>3</sup> Based only upon the institutional listing requirements in the subject.  
<sup>4</sup> Methods of investigation in agriculture.

1. Represent's credit for summer practice.

TABLE 9.—Requirements for graduation—Part V: Military training, physical training, biology.

[The use of italics indicates that a limited number of courses may be substituted for the one listed.]

Institutions.	Biology.											
	Military science and tactics.			Personal hygiene and human physiology.			Physical training (gymnasium).			General botany.		
	Freshman.	Sophomore.	Junior.	Freshman.	Sophomore.	Junior.	Freshman.	Sophomore.	Junior.	Freshman.	Sophomore.	Junior.
Alabama Polytechnic Institute.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Arizona.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Arkansas.....	2	2	2	2	2	2	2	2	2	2	2	2
University of California.....	2	2	2	2	2	2	2	2	2	2	2	2
Colorado Agricultural College.....	2	2	2	2	2	2	2	2	2	2	2	2
Connecticut Agricultural College.....	2	2	2	2	2	2	2	2	2	2	2	2
Delaware College.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Florida.....	2	2	2	2	2	2	2	2	2	2	2	2
Georgia State College of Agriculture.....	2	2	2	2	2	2	2	2	2	2	2	2
College of Agriculture and Mechanic Arts of the University of Georgia.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Idaho.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Illinois.....	2	2	2	2	2	2	2	2	2	2	2	2
Purdue University (Ind.).....	2	2	2	2	2	2	2	2	2	2	2	2
Iowa State College of Agriculture and Mechanic Arts.....	2	2	2	2	2	2	2	2	2	2	2	2
Kansas State Agricultural College.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Kentucky.....	2	2	2	2	2	2	2	2	2	2	2	2
Louisiana State University and Agricultural and Mechanical College.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Maine.....	2	2	2	2	2	2	2	2	2	2	2	2
Maryland State College of Agriculture.....	2	2	2	2	2	2	2	2	2	2	2	2
Michigan State Agricultural College.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Minnesota.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Missouri.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Nebraska.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Nevada.....	2	2	2	2	2	2	2	2	2	2	2	2
University of New Hampshire.....	2	2	2	2	2	2	2	2	2	2	2	2
University of New York.....	2	2	2	2	2	2	2	2	2	2	2	2
University of North Carolina.....	2	2	2	2	2	2	2	2	2	2	2	2
University of North Dakota.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Ohio.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Oklahoma.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Oregon.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Pennsylvania.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Rhode Island.....	2	2	2	2	2	2	2	2	2	2	2	2
University of South Carolina.....	2	2	2	2	2	2	2	2	2	2	2	2
University of South Dakota.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Tennessee.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Texas.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Vermont.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Virginia.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Washington.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Wisconsin.....	2	2	2	2	2	2	2	2	2	2	2	2
University of Wyoming.....	2	2	2	2	2	2	2	2	2	2	2	2

Includes all phases of botany, except agricultural botany, bacteriology, and plant pathology

Includes all phases of botany, except agricultural botany, bacteriology, and plant pathology

- Includes all
- Soil biology
- Microbiology



The use of *italic* indicates that a limited number of courses may be substituted for the one listed.

Institutions.	Chemistry.										Physics.	Geology.	All science subjects.			Effective work.			All subjects.			
	Inorganic or general chemistry.		Qualitative analysis.		Quantitative analysis.		Organic chemistry.		Agricultural chemistry.				Freshman.	Sophomore.	Junior.	Freshman.	Sophomore.	Junior.		Freshman.	Sophomore.	Junior.
	Freshman.	Senior.	Freshman.	Senior.	Freshman.	Senior.	Freshman.	Senior.	Freshman.	Senior.												
Alabama Polytechnic Institute.	8		6		0		4		23		23		23		8	32	163	54	51	194	184	12
University of Arizona.	7		4		44		3		4		8		5		9	10	18	5	4	35	38	32
University of Arkansas.	10		4				3		6		3		5		24	23	73	31	8	38	109	36
University of California.	10						10		3		3		2		23	13	41	41	2	17	103	34
Colorado Agricultural College.	8		13		13		6		0		8		10		4	11	11	0	0	10	10	35
Connecticut Agricultural College.	6		13		3		6		0		8		8		12	17	18	12	2	39	41	35
Dalhousie College.	6		6		3		6				6		6		6	19	18	12	2	36	32	32
University of Florida.	6		6												13	20	163	44	9	11	363	364
Georgia State College of Agriculture.	6		7		27		5		63		63		63		18	21	9	104	13	19	41	40
College of Agriculture and Mechanic Arts, University of Hawaii.	63		23		7				6		6		3		11	11	6	13	4	11	37	32
University of Idaho.	11		10												23	10	13	20		50	18	45
University of Illinois.	9		10												15	11	24	3	3	184	45	43
Indiana University (Ind.).	10				3		31		4		3		3		13	11	28	14	13	14	364	338
Iowa State College of Agriculture and Mechanic Arts.	10						31		5		5		3		19	16	4		2	30	18	36
Iowa State Agricultural College.	11														13	11	28	14	13	14	364	338
Wisconsin State University and Agricultural and Mechanical College.	9						3		7		2		8		8	26			8	18	41	38
University of Maine.	9						3								17	16	17		54	18	42	103
University and State College of Agriculture and Mechanic Arts, University of Massachusetts.	63		31				23						8		15	103	22	6		54	54	52
Massachusetts Agricultural College.	31		31				104		2				44		64	18	109		4	18	41	314
Michigan Agricultural College.	8		31						3				0		17	24			30	44	43	48
University of Minnesota.	12		5				43		43		2		3		20	17	8		64	50	3	41
Minnesota Agricultural and Mechanical College.	5														20	17	8		7	10	34	31
University of Missouri.	5														19	22	13		10	61	404	411
Marion State College of Agriculture and Mechanic Arts.	9						53		53		53		53		19	22	13		10	61	404	411

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<sup>1</sup> Includes only the elective work that remains after satisfying the requirements for specialization.

TABLE 10.—Percentage distribution of the requirements for graduation by subjects.

Institutions.	All subjects.		Nontechnical subjects.				Science subjects.				Technical subjects.				Military and physical training.		Elective.
	Collegiate credits.	Semester hours.	English.	Foreign language.	Mathematics.	Social sciences.	All nontechnical subjects.	Pure sciences.	Applied sciences.	All science subjects.	Agricultural subjects.	Agricultural engineering.	All technical subjects.	Military training.	Physical education.	All military and physical training.	
Alabama Polytechnic Institute.....	138	133	11.4	3.8	5.2	3.4	23.8	28.0	4.1	52.1	25.8	8.8	54.6	0.7	0	6.7	2.9
University of Arizona.....	124	138	10.1	5.6	3.8	4.4	23.9	27.5	3.3	39.8	27.5	2.2	29.7	4.4	0	4.4	11.3
University of Arkansas.....	138	131	8.2	4.0	2.4	3.9	14.5	27.6	1.9	29.8	38.4	4.0	42.4	5.3	0	6.3	8.3
University of California.....	130	149	4.0	4.0	4.0	4.0	16.1	26.8	16.1	36.9	30.8	2.1	32.9	4.0	4.0	8.1	6.0
Colorado Agricultural College.....	160	160	9.1	0	3.0	2.6	15.0	39.9	3.1	34.6	17.5	13.1	39.6	3.7	1.9	6.6	14.8
Connecticut Agricultural College.....	150	150	6.7	0	0	0	17.7	25.0	6.0	26.0	21.3	6.0	27.3	8.0	1.3	3.1	22.7
University of Florida.....	130	130	7.7	8.0	2.0	2.0	14.7	25.8	4.8	32.6	32.2	2.2	37.9	3.0	1.0	4.0	9.9
University of Georgia.....	132	132	7.7	0	3.0	6.0	16.2	26.0	4.1	32.6	32.2	2.2	37.9	3.0	1.0	4.0	9.9
Georgia State College of Agriculture and Mechanical Arts of the Territory of Hawaii.....	79	158	7.6	0	3.8	3.8	15.2	17.1	3.7	22.8	36.8	3.0	41.8	5.1	0	5.1	15.1
University of Idaho.....	136	147	8.1	8.1	1.0	2.0	22.2	32.8	4.1	37.9	19.4	6.8	56.2	0	0	0	14.1
University of Illinois.....	112	164	6.1	0	0	0	27.2	28.5	8.5	35.7	31.1	2.4	53.5	1.9	0	4.0	19.8
Purdue University (Ind.).....	130	134	6.5	0	0	7.1	11.6	20.7	7.8	28.5	37.6	4.8	42.4	3.2	1.3	4.6	11.0
Iowa State College of Agriculture and Mechanical Arts.....	168	191	6.2	2.2	3.1	6.1	21.6	21.5	8.8	31.3	37.4	3.6	41.0	3.1	0	3.1	0
Kansas State Agricultural College.....	134	175	5.8	0	1.7	2.8	10.3	21.7	8.6	29.3	39.7	5.1	44.8	2.2	1.2	3.4	11.1
University of Kentucky.....	136	137	7.6	0	0	0	7.6	26.4	7.0	27.1	41.6	4.3	45.9	3.8	0	3.8	16.3
University of Louisiana.....	114	145	6.9	0	0	2.0	8.9	23.4	3.5	29.9	35.0	7.0	42.0	4.1	2.8	6.9	16.2
Louisiana State University and Agricultural and Mechanical College.....	138	158	3.8	0	3.8	0	7.6	21.5	0	21.6	36.8	11.3	48.1	6.3	0	6.3	16.6
College of Maine.....	118	128	11.0	3.7	1.1	10.7	26.0	22.3	3.0	29.4	31.2	5.9	57.9	5.7	1.0	5.7	14.0
Maryland State College of Agriculture.....	218	212	10.2	8.0	6.7	9.3	32.2	22.0	3.4	21.1	16.5	3.0	16.5	6.7	2.0	6.7	15.3
Massachusetts Agricultural College.....	220	1194	5.9	0	2.7	2.0	10.6	21.2	0	21.2	27.0	3.5	50.5	5.3	0	5.3	29.4
Michigan Agricultural College.....	240	1704	7.5	0	1.9	7.5	16.9	21.2	8.8	29.0	32.2	7.8	40.0	5.3	0.6	5.3	10.0
University of Minnesota.....	144	160	6.1	0	6.5	5.5	18.1	22.1	6.5	28.6	33.2	5.8	39.0	5.5	1.3	6.8	7.4
Mississippi Agricultural and Mechanical College.....	202	194	6.1	0	0	4.0	8.9	33.9	2.4	36.3	33.8	6.0	33.8	3.2	0	3.2	17.7
University of Missouri.....	124	124	4.9	0	1.8	2.4	10.6	21.1	12.7	36.8	36.0	4.0	40.0	3.1	0	3.1	9.5
Montana State College of Agriculture and Mechanical Arts.....	150	161	6.2	0	0	7.1	12.3	21.0	13.0	37.0	24.7	6.5	31.2	3.9	0	6.5	16.6
University of Nebraska.....	128	154	5.2	0	0	4.5	8.3	20.6	7.6	24.9	25.2	12.5	37.7	2.5	0	12.5	25.8
University of Nevada.....	148	160	3.8	0	0	0	8.3	20.6	7.6	24.9	25.2	12.5	37.7	2.5	0	12.5	25.8
New Hampshire College of Agriculture and Mechanical Arts.....	144	155	3.9	0	2.6	4.5	11.0	26.6	4.4	31.0	33.3	7.2	42.5	5.2	0	7.2	10.5



1. In this column is shown the number of credits required for graduation according to the institution's method of awarding credit. In most cases the figures represent semester-hours, but in a few cases, where the college year is divided into three terms, they represent "term hours," which are one-third lower in value. In some cases, Georgia State College, the credits represent year hours, which have twice the value of semester hours.

2. In this column is shown the number of credits required for graduation on the basis of corrected semester-hours. The numbers are the result of an attempt to make correction for varying methods of awarding credit.

3. Under English are included grammar, composition, rhetoric, literature, library practice, argumentation, public speaking, and journalism.

4. Under this head are included such subjects as history, civics, government, economics, sociology, education, and psychology.

5. Under natural science are included general chemistry, organic chemistry, general physics, astronomy, meteorology, and geology.

6. Under applied science are included those subjects that are more closely related to technical agriculture, such as agricultural botany, agricultural bacteriology, agricultural chemistry, economic entomology, etc.

7. Included under this head are:

- a. Agricultural engineering (includes surveying, drawing, irrigation, drainage, farm machinery, farm structures, etc.).
- b. Includes personal hygiene and human physiology.

8. No distinction is made between recitation and laboratory credits.

9. Percentage is based upon the total corrected semester hours.

10. In this analysis many elective courses have been included to meet the requirements for students specializing in agronomy. The numbers listed, therefore, represent the amount of elective work required after satisfying the requirements for specialization.

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## AMERICAN AGRICULTURAL COLLEGES.

TABLE 11.—Summary distribution of work for graduation, by years.

Years and hours.	Nontechnical subjects.					Technical subjects.					Elective. <sup>7</sup>	All subjects.
	English. <sup>1</sup>	Foreign language.	Mathematics.	Social science. <sup>2</sup>	All nontechnical.	Science. <sup>3</sup>	Agriculture. <sup>4</sup>	Agricultural engineering. <sup>5</sup>	All technical subjects.	Military and physical training. <sup>6</sup>		
Freshman year:												
Number of colleges.....	39	15	28	12	50	50	42	32	48	49	6	50
Maximum hours.....	11	4	12	6	26	20	20	11	24	7	12	57
Minimum hours.....	4	4	3	3	3	2	1	1	2	2	2	34
Median hours <sup>8</sup> .....	6	6	6	3	12	15	8	3	10	4	4	41
Sophomore year:												
Number of colleges.....	29	13	6	5	38	50	47	18	50	49	11	50
Maximum hours.....	6	4	6	9	15	32	26	12	20	7	13	57
Minimum hours.....	2	4	14	2	4	9	2	14	3	2	2	32
Median hours <sup>8</sup> .....	4	6	11	5	6	18	12	3	12	3	5	41
Junior year:												
Number of colleges.....	16	5	2	3	15	45	50	22	50	17	32	50
Maximum hours.....	6	10	12	15	21	30	12	30	6	30	57	57
Minimum hours.....	1	34	3	1	3	2	2	2	2	2	1	24
Median hours <sup>8</sup> .....	4	5	3	6	6	12	14	3	15	3	6	38
Senior year:												
Number of colleges.....	6	4	32	33	33	50	19	50	10	40	50	50
Maximum hours.....	43	10	10	15	20	28	7	34	6	24	57	57
Minimum hours.....	2	2	2	2	3	2	3	2	2	4	27	27
Median hours <sup>8</sup> .....	1	7	6	6	6	17	4	18	3	11	37	37
All years:												
Number of colleges.....	50	20	32	45	50	50	50	45	50	49	41	50
Maximum hours.....	21	20	134	227	614	73	78	21	90	21	50	228
Minimum hours.....	4	4	14	3	10	31	21	3	21	4	54	124
Median hours <sup>8</sup> .....	10	12	5	8	21	48	51	9	60	8	20	157

<sup>1</sup> Includes literature, composition, rhetoric, argumentation, public speaking, journalism, and library practice.

<sup>2</sup> Includes history, civil government, economics, sociology, and education.

<sup>3</sup> Includes, in addition to pure science courses, all science subjects closely related to agriculture, such as agricultural chemistry, economic entomology, etc.

<sup>4</sup> Includes veterinary subjects in addition to the strictly agricultural subjects.

<sup>5</sup> Includes drawing, shopwork, surveying, irrigation, drainage, farm structures, and farm equipment.

<sup>6</sup> Courses in personal hygiene and human physiology are classed under physical training.

<sup>7</sup> Includes only the elective work remaining after satisfying the requirements for specialization.

<sup>8</sup> In determining the median number in each case, only those colleges requiring the subject were considered.

TABLE 12.—Average distribution of the required work for the degree of B. S. in agriculture, covering the high-school period, the college period, and the two periods combined.

Subjects.	For admission.		For graduation.		For 8-year period.	
	Number of institutions requiring subject.	Average per cent.	Number of institutions requiring subject.	Average per cent.	Number of institutions requiring subject.	Average per cent.
English.....	48	20.3	50	6.8	50	13.5
Foreign language.....	18	14.3	20	6.7	27	10.5
Mathematics.....	49	15.7	32	3.7	48	9.7
Social science.....	36	8.2	45	5.2	49	6.7
Science.....	34	8.7	50	30.6	50	19.6
Technical subjects.....	0	—	50	30.5	50	18.3
Military and physical training.....	0	—	49	5.7	49	2.8
All prescribed subjects.....	48	54.1	50	89.3	50	71.6
Elective subjects.....	48	45.9	41	10.7	50	28.3

## APPENDIX.

### OUTLINE REQUIREMENTS FOR GRADUATION.

The work required for graduation in agriculture by the several institutions is shown in the outlines on the following pages. In all cases, except those indicated, the requirements are for specialization in agronomy or farm crops. In many cases the outlines include, in addition to the prescribed work, certain courses that have been selected to meet the major and minor requirements. In a few cases, where a liberal elective system prevails, a large part of the schedule has been filled in either by the writer or by an officer of the institution concerned. In all cases, except four, the schedules have been approved by some officer of the institution concerned. In the cases of the four exceptions, the outlines were not returned, and are therefore assumed to be correct.

The asterisk (\*) attached to the name of a course indicates that the work is not an absolute requirement. In many cases it indicates the courses that have been added to meet major or minor requirements. In other cases it indicates that a limited degree of substitution is permitted.

In many cases the credit for the required work is shown in two or more columns. In the first column, in each case, is shown the institution's credit rating and in a parallel column is shown an adjusted rating, which is an attempt to make correction for the varying methods for awarding credit. The adjustment, in most cases represents either a change from term-hours to semester-hours or an increased credit to make up for extra work required in laboratory or field practice. Since a large proportion of the institutions require but two hours of laboratory work as the equivalent of one hour of lecture or recitation work, this has been adopted as a basis of comparison. The adjustment is not entirely satisfactory, but materially assists in bringing all the institutions on a common basis from the standpoint of required work.

These outlines are presented mainly to show the source of the data upon which the tables concerning graduation are based. In many cases catalogues showing some variation in requirements have been received since making the tables. The modifications in most cases were unimportant and did not seem to warrant the remodeling of the tables. It is believed also that the assembled outlines, showing the requirements for graduation in a common subject, should be of service to officials charged with the responsibility for planning courses of study and to high-school officials who are called upon to advise prospective college students concerning collegiate courses.



## ALABAMA POLYTECHNIC INSTITUTE.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits (hrs. per wk.).	Term hours (2-hr. lab. basis).	Semester hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits (hrs. per wk.).	Term hours (2-hr. lab. basis).	Semester hours (2-hr. lab. basis).
English composition.....	7	7	43	Argumentation.....	9	9	6
English literature.....	8	8	54	European history.....	4	4	24
Plane trigonometry.....	5	5	34	Common crops.....	4	3	2
United States history.....	6	6	4	General zoology.....	10	8	54
Advanced algebra.....	10	10	62	General botany.....	18	12	8
Surveying.....	10	5	34	Physics.....	9	9	6
Drawing.....	15	7½	5	Organic chemistry.....	6	6	4
Shopwork.....	18	9	6	Qualitative chemistry.....	18	9	6
General chemistry.....	12	12	8	Agricultural chemistry.....	4	4	24
Military drill.....	9	4½	3	Stock judging.....	6	3	2
Total.....	100	74	49½	Farm accounts.....	2	1½	1
				Plant propagation.....	6	4	24
				Small grains.....	4	3	2
				Military drill.....	9	4½	3
				Total.....	109	80	53½
JUNIOR YEAR.				SENIOR YEAR.			
English literature*.....	9	9	6	Cotton.....	6	4	24
Dairying.....	4	4	24	General entomology.....	5	4	24
Agricultural bacteriology.....	6	4	24	Economic entomology.....	5	4	24
Veterinary science.....	15	12	8	Soils.....	15	15	10
Drainage.....	4	3	2	Farm management.....	4	3	2
Landscape gardening.....	2	2	14	Farm machinery.....	2	1	4
Vegetable gardening.....	8	6	4	Forestry.....	5	4	24
Orchard technique.....	2	1	1	Thesis.....	12	6	4
Stock judging.....	8	4	24	Modern language.....	11	11	14
Quantitative analysis.....	18	9	6	Military science.....	3	3	2
Geology.....	4	4	24	Elective (limited).....	8	8	54
Physiological botany.....	12	8	54				
Military tactics.....	3	3	2				
Military drill.....	9	4	24				
Total.....	104	78	46½	Total.....	76	63	42

UNIVERSITY OF ARIZONA.

Students are not required to follow any prescribed schedule, even in the first year. A suggestive outline is presented only for the guidance of students. Of the 124 credit hours required for graduation, 86 hours are prescribed, but, except for prerequisite requirements, they may be taken at any time. The following outline shows the suggested schedule with selected courses of the agronomy group included:

FRESHMAN YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).
English exposition.....	3	3	Modern language.....	4	4
Argumentation.....	3	3	Biology (general).....	4	5
Modern language.....	4	4	Botany (physiology).....	4	5
Chemistry (general).....	8	9	Soil physics.....	4	4
Algebra.....	3	3	Soil fertility.....	4	4
Trigonometry (plane).....	2	2	Stock judging.....	3	3
Farm crops.....	3	3	Elective (limited).....	7	8
Drawing (mechanical).....	2	3	Military tactics.....	2	3
Elective (limited).....	2	2			
Military tactics.....	2	3			
Total.....	32	35	Total.....	32	38
JUNIOR YEAR.			SENIOR YEAR.		
Modern language or literature.....	4	4	Modern language or literature.....	4	4
Plant breeding.....	3	3	Economics (general).....	6	6
Physics (general).....	8	8	Farm management.....	3	3
Meat production.....	3	3	Vegetable gardening.....	3	3
Plant propagation.....	3	4	Dry farming.....	3	3
Soil bacteriology.....	4	11	Agronomy literature.....	4	5
Chemistry (qualitative).....	1	3	Elective (free).....	4	4
Elective (free).....	1	1			
Total.....	30	33	Total.....	30	32

UNIVERSITY OF ARKANSAS.

FRESHMAN YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).
Farm crops.....	6	6	Soil physics.....	5	6
Breeds of live stock.....	3	3	Chemistry (organic).....	3	3
Biology (general).....	6	6	Chemistry (qualitative).....	3	4
Chemistry (elementary).....	6	7	Mathematics.....	4	4
Composition and rhetoric.....	6	6	Physics (general).....	5	5
Plant propagation.....	3	3	Entomology (general).....	3	3
Shopwork.....	2	3	Bacteriology.....	5	5
Military science and tactics.....	2	4	Stock judging.....	3	3
			Drawing (mechanical).....	2	2
			Surveying.....	1	1
			Military science and tactics.....	2	4
Total.....	34	38	Total.....	36	40
JUNIOR YEAR.			SENIOR YEAR.		
Composition.....	6	6	Economics (rural).....	6	6
Chemistry (quantitative).....	7	11	Farm management.....	6	6
Chemistry (agricultural).....	3	3	Soil fertility.....	5	6
Feeds and feeding.....	3	3	Plant pathology.....	3	3
Farm crops.....	6	6	Thesis.....	4	4
Poultry.....	6	6	Feeds and feeding.....	6	6
Elective (approved).....	7	8	Elective (approved).....	4	4
Total.....	34	36	Total.....	34	36

## UNIVERSITY OF CALIFORNIA.

In the following table 20 hours' work in agronomy and allied subjects has been included to meet the requirements for specialization in agronomy.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).
Botany (general).....	6	9	Modern language.....	6	6
Chemistry (inorganic).....	10	10	Chemistry (agricultural).....	5	6
Bacteriology.....	4	6	Surveying.....	3	3
Mathematics.....	6	6	Geology.....	3	3
English.....	6	6	Zoology (general).....	4	4
Physical education (gymnastics).....	1	2	Genetics.....	4	4
Physical education (hygiene).....	2	2	Plant propagation.....	4	13
Military drill.....	1	2	Soil technology.....	1	4
Military science.....	1	1	Physical education (gymnastics).....	1	2
			Military drill.....	1	2
			Military science.....	1	1
Total.....	37½	13	Total.....	26½	40½

JUNIOR YEAR.			SENIOR YEAR.		
Summer practice.....	6	6	Thesis.....	1	5
Botany (economic).....	3	1	Farm management *.....	3	3
Economics.....	3	3	Conference (agronomy) *.....	1	1
Economics (rural).....	3	3	Soil bacteriology *.....	3	13
Cereals.....	3	3	Elective (agricultural).....	9	11
Crop production *.....	3	3	Elective (approved).....	6	7
Soil chemistry *.....	3	3			
Plant diseases *.....	1	1			
Elective (approved).....	2	2			
Total.....	30	31	Total.....	26	31½

## COLORADO AGRICULTURAL COLLEGE.

FRESHMAN YEAR.	College credits (semester- hours).	SOPHOMORE YEAR.	College credits (semester- hours).
Stock judging.....	2	Farm crops.....	3
Botany general.....	5	Soils.....	3
Botany (agricultural).....	2	Stock judging.....	2
Rural architecture.....	3	Chemistry (inorganic).....	10
Shopwork.....	4	Zoology (general).....	4
Surveying.....	5	Physics.....	10
Physiology.....	3	Plant propagation.....	3
English literature.....	4	Argumentation.....	5
Composition and rhetoric.....	6	Military drill.....	2
Algebra.....	24		
Trigonometry.....	21		
Military drill.....	2		
Total.....	41	Total.....	12½

JUNIOR YEAR.		SENIOR YEAR.	
Farm crops (laboratory).....	3	Farm crops (advanced).....	3
Soils (laboratory).....	2	Farm management.....	3
Farm machinery.....	6	Plant breeding.....	3
Irrigation.....	3	Genetics (general).....	1
Botany (anatomy).....	2	Economics (general).....	2
Botany (physiology).....	3	Irrigation law.....	2
Chemistry (organic).....	10	Bacteriology.....	1
Geology.....	2	Embryology.....	1
Military drill.....	2	Plant pathology.....	3
Elective (approved).....	6	Electives (approved).....	17
Total.....	39	Total.....	37½

CONNECTICUT AGRICULTURAL COLLEGE.

Since most of the work of the last two years is elective, this schedule includes, in addition to the required work, certain courses that are recommended for students specializing in agronomy.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Types and breeds of live stock.....	3	Soil management.....	3
Field crops.....	3	Farm machinery.....	3
Shopwork and drawing.....	3	Farm management.....	3
Botany (general).....	4	Geology (general).....	3
Zoology.....	4	Chemistry (inorganic).....	4
English.....	4	English.....	4
Military training.....	3	Military training.....	3
Physical training.....	2	Elective (approved).....	13
Elective (approved).....	12		
Total.....	40	Total.....	40
JUNIOR YEAR		SENIOR YEAR.	
History (constitutional).....	6	Soil bacteriology*.....	3
Economics (general).....	6	Farm management surveys*.....	3
Field crops (advanced)*.....	6	Chemistry (agricultural)*.....	3
Bacteriology (general)*.....	4	Plant pathology*.....	3
Genetics*.....	3	Field crops*.....	4
Plant physiology*.....	3	Soil fertility*.....	4
Organic chemistry*.....	4	Agricultural engineering*.....	3
Military training.....	3	Military training.....	3
		Electives (approved).....	9
Total.....	35	Total.....	35

DELAWARE COLLEGE.

The following outline includes 18 hours work in selected courses to meet the requirements for specialization in agronomy.

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Composition.....	6	English literature.....	4
Geometry.....	2	Modern language.....	6
Trigonometry.....	2	Chemistry (organic).....	6
Modern language.....	6	Chemistry (qualitative).....	11
History.....	1	Chemistry (quantitative).....	11
Botany (general).....	6	Physics.....	8
Chemistry (inorganic).....	6	Physical training (gymnastics).....	1
Agriculture (general).....	4	Military science.....	3
Physical training (gymnastics).....	1	Animal husbandry (elective).....	4
Elective (limited).....	2	Horticulture (elective).....	4
Military science.....	3	Elective (free).....	2
Total.....	39	Total.....	41
JUNIOR YEAR.		SENIOR YEAR.	
Zoology.....	6	Sociology.....	3
Bacteriology.....	6	Economics.....	3
Chemistry (agricultural).....	6	Genetics.....	3
Military science.....	3	Farm management.....	3
Field crop production.....	3	Thesis.....	3
Cereal crops.....	3	Military science.....	3
Soil fertility.....	6	Forage crops.....	3
Elective (free).....	2	Farm equipment.....	3
		Plant breeding.....	2
		Soils (investigation).....	3
		Elective (free).....	6
Total.....	35	Total.....	35



## UNIVERSITY OF FLORIDA.

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Agronomy (general).....	4	Fertilizers.....	3
Plant propagation.....	4	Trucking.....	4
Types and breeds of animals.....	4	Chemistry (inorganic).....	10
Farm machinery.....	4	Botany (physiology).....	3
Botany (general).....	6	Zoology (general).....	6
Rhetoric (advanced).....	6	Military science.....	2
Trigonometry (plane).....	4	Elective (approved).....	4
Seminar (agricultural).....	1		
Library practice.....	1		
Military science.....	2		
Total.....	36	Total.....	32
JUNIOR YEAR.		SENIOR YEAR.	
Field crops.....	3	Farm management.....	6
Forage crops.....	3	Landscape gardening.....	2
Soil technology.....	6	Agricultural engineering.....	3
Chemistry (qualitative).....	3	Soil fertility.....	3
Chemistry (quantitative).....	3	Economics or rural sociology.....	6
Plant pathology.....	3	Extension teaching.....	2
Bacteriology (general).....	3	Agricultural journalism.....	3
Bacteriology (agricultural).....	3	Elective (approved).....	7
Entomology.....	3		
Elective (approved).....	2		
Total.....	32	Total.....	32

## GEORGIA STATE COLLEGE OF AGRICULTURE

In the following outline certain courses have been added to meet the minor group requirements.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Year-hours.	Semester-hours.	SOPHOMORE YEAR.	Year-hours.	Semester-hours.
Cereals.....	2	4	Live stock (breeds).....	2	4
Live stock (types and classes).....	1	2	Live stock (judging).....	1	2
Agricultural engineering (general).....	3	6	Botany (agricultural).....	3	6
Fruit growing.....	1	2	Chemistry (qualitative).....	3	6
Propagation, etc.....	1	2	History.....	1	3
Truck gardening.....	1	2	Economics.....	1	3
Rhetoric.....	3	6	English literature.....	3	6
Chemistry (elementary).....	3	6	Physics (elementary).....	3	6
Trigonometry.....	2	4	Soil physics.....	1	3
Algebra.....	1	2	Soil fertility.....	1	3
Military drill.....	1	2	Military drill.....	1	2
Military science.....	1	2			
Total.....	20	40	Total.....	22	44
JUNIOR YEAR.			SENIOR YEAR.		
Major:			Major:		
Grasses and forage crops.....	3	6	Soil management.....	3	6
Soil formations.....	2	4	Farm crops.....	3	6
Drainage and irrigation.....	1	2			
Minor:			Minor:		
Chemistry (organic)*.....	3	6	Farm management*.....	3	6
Entomology (economic)*.....	1	3	Genetics*.....	3	6
Bacteriology*.....	1	3	Elective (free).....	6	12
Elective (free).....	6	12			
Military drill.....	1	2			
Total.....	19	38	Total.....	18	36

COLLEGE OF HAWAII.

Curriculum in General Agriculture.

FRESHMAN YEAR.	College credits.	Semester-hours. (2 hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours. (2 hr. lab. basis).
English composition.....	6	6	English literature.....	6	6
Modern language.....	6	6	Modern language.....	6	6
Trigonometry.....	3	3	Qualitative analysis.....	6	7
Algebra (advanced).....	3	3	Zoology (general).....	3	3½
Chemistry (general).....	6	6½	Plant physiology.....	3	3½
Botany (general).....	6	7	Surveying.....	4	5
Drawing.....	4	5	Physics.....	6	6½
Physics (6 hours) for conditioned students.....					
Total.....	34	36½	Total.....	34	37
JUNIOR YEAR.			SENIOR YEAR.		
Entomology (general).....	6	7	Tropical crops.....	3	3
Agriculture (general).....	10	10	Temperate Zone crops.....	2	2
Agricultural chemistry.....	6	6	Plant breeding.....	3	3½
Geology.....	3	3½	Cane sugar production.....	4	4
Elective.....	9	9½	Breeds of live stock.....	3	3½
			Animal nutrition, care, feeding.....	3	3
			Economics.....	3	3
			Bacteriology.....	3	4½
			Elective.....	10	11
Total.....	34	36½	Total.....	34	37

UNIVERSITY OF IDAHO.

FRESHMAN YEAR.	University credits.	Semester-hours. (2 hr. lab. basis).	SOPHOMORE YEAR.	University credits.	Semester-hours. (2 hr. lab. basis).
English literature.....	4	4	Composition.....	4	4
English composition.....	2	2	Chemistry (qualitative and quantitative).....	4	5
Chemistry (general).....	8	10	Zoology (general).....	4	5
Botany (general).....	6	8	Bacteriology.....	4	5
Field crops.....	4½	5	Agricultural chemistry.....	5	6
Live stock (market types).....	2½	3	Horticulture (general).....	3	3
Dairying (elements).....	1½	2	Live stock (breeds).....	2½	3
Nursery practice.....	1	1½	Milk production.....	3	3
Shop work (wood).....	2	2	Soils (physics and fertility).....	4½	5
Military drill.....	2	2	Military drill.....	2	2
Military regulations.....	2	2	Military regulations.....	2	2
Total.....	35½	41½	Total.....	37½	43
JUNIOR YEAR.			SENIOR YEAR.		
Plant physiology.....	4	5	Plant pathology.....	4	5
Farm management.....	5	3	Plant breeding.....	2	2
Farm surveying.....	2	2½	Crop improvement.....	2	2
Soils (classification).....	2	2	Thesis.....	3	3
Forage crops.....	3½	4	Seminar.....	2	3
Entomology.....	3	4	Soil chemistry.....	2½	3
Soil management.....	2½	3	Entomology.....	2	2½
Animal nutrition.....	3	3	Elective (free).....	17½	19
Elective (free).....	12½	13½			
Total.....	38	40	Total.....	24	29½

## UNIVERSITY OF ILLINOIS.

The following outline contains the prescribed work and selected subjects to meet the requirements for a student specializing in agronomy. Only the work of the first two years is prescribed by the university. Within wide limits the work of the junior and senior years is elective; the selection of studies for these years shown below has been approved by the dean's assistant as constituting a satisfactory program for a student specializing in agronomy.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Uni- versity credits.	Semes- ter- hours. (2-hr. lab. basis.)	SOPHOMORE YEAR.	Uni- versity credits.	Semes- ter- hours. (2-hr. lab. basis.)
Country-life problems.....	1	2	Genetics.....	1	2
Farm crops.....	4	5	Stock feeding.....	2	3
Chemistry (inorganic).....	8	11	Botany (general).....	5	7
Horticulture (elementary).....	4	6	Farm mechanics.....	3	3
Live stock judging.....	3	3	Chemistry (quantitative).....	5	7
Dairying (elementary).....	1	2	English writers.....	4	4
Rhetoric and themes.....	6	6	Military drill.....	2	2
Gymnastics and hygiene.....	2	2	Elective (free).....	10	13
Military drill.....	2	2			
Drill regulations.....	1	1			
Elective (free).....	4	4			
Total.....	36	41	Total.....	32	41
JUNIOR YEAR.			SENIOR YEAR.		
Field machinery.....	3	4	Soil fertility (advanced).....	2	3
Farm crops (advanced).....	3	3	Soil biology.....	5	6
Special crops.....	5	5	Plant breeding.....	2	2
Soil physics and management.....	7	7	Thesis.....	7	7
Soil fertility.....	5	7	Farm management.....	3	3
Chemistry (organic).....	3	3	Entomology (elementary).....	4	4
Plant diseases.....	3	3	Entomology (economic).....	3	3
Economics.....	3	3	American government.....	2	2
Marketing farm produce.....	2	2	Agricultural cooperation.....	2	2
Total.....	32	37	Total.....	30	32

## PURDUE UNIVERSITY.

FRESHMAN YEAR.	Uni- versity credits.	Semes- ter- hours. (2-hr. lab. basis.)	SOPHOMORE YEAR.	Uni- versity credits.	Semes- ter- hours. (2-hr. lab. basis.)
Drawing farm buildings.....	2	1	Soils.....	3	3
Live stock judging.....	5	6	Field crops.....	3	3
Botany (agricultural).....	3	3	Soil fertility.....	3	3
Biology (general).....	6	7	Farm mechanics.....	3	3
Chemistry (general).....	6	6	Live stock management.....	4	4
English (composition).....	3	3	Milk.....	3	3
Trigonometry.....	3	3	English literature.....	6	6
Algebra.....	3	3	Fruit growing.....	3	3
Entomology.....	3	3	Vegetable gardening.....	3	3
Poultry.....	3	3	Chemistry (qualitative).....	8	10
Military drill.....	2	3	Military drill.....	2	3
Total.....	44	50	Total.....	41	48
JUNIOR YEAR.			SENIOR YEAR.		
Genetics.....	3	3	Farm management.....	6	6
Animal nutrition.....	3	3	Economics.....	6	6
History.....	6	6	Thesis.....	6	6
Soils.....	4	5	Soils.....	3	3
Field crops.....	4	5	Field crops.....	3	3
Chemistry (agricultural).....	3	3	Bacteriology.....	4	4
Soil fertility.....	3	3	Soil bacteriology.....	4	4
Fungous diseases.....	4	5	Chemistry (quantitative).....	8	10
Vegetable physiology.....	4	5	Modern language.....	6	6
Modern language.....	6	6			
Total.....	40	45	Total.....	44	50

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## IOWA STATE COLLEGE.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Shopwork.....	2	3	Grain judging.....	2	3
Live stock (types).....	4	5	Surveying.....	2½	3
Chemistry (general).....	4	10	Farm machinery.....	2½	3
Crop production.....	3½	6	Forage crops.....	2½	3
Farm dairying.....	2½	3	Soil physics.....	3½	4
Horticulture (general).....	2½	3	Live stock (breeds).....	6½	8
Graphic methods.....	1	1	Chemistry (organic).....	3½	4
Plant morphology.....	1½	2	Chemistry (agricultural).....	3½	4
Farm forestry.....	2	2	English composition.....	6	6
Mathematics.....	3	3	Geology.....	2½	3
Physics.....	3	3	Military drill.....	0	2
Physical education (gymnastics).....	0	1			
Physical education (hygiene).....	0	1			
Military drill.....	0	2			
Library instruction.....	0	0			
Total.....	35½	45	Total.....	35½	43
JUNIOR YEAR.			SENIOR YEAR.		
Soil fertility.....	3½	4	Crop production *.....	4	6
Soil bacteriology.....	3½	4	Farm crops seminar.....	1	1½
Bacteriology (general).....	4	5	Thesis and reports.....	2	3
Plant embryology.....	1½	3	Soil management.....	2	2
Economics (agricultural).....	3	3	Journalism.....	2	2
Zoology (general).....	3½	4	Plant pathology.....	2½	3
Entomology (economic).....	3½	4	Truck farming.....	2	2
Plant breeding (horticultural).....	2½	3	Animal feeding.....	3	3
Plant breeding (agronomical).....	2	2½	Agricultural economic history.....	2	2
Farm crops seminar.....	1	1½	Argumentation *.....	2	2
Vegetable physiology.....	3½	4	Elective (free).....	13½	16½
Farm management.....	2½	3			
Elective (free).....	2½	3			
Total.....	36	44	Total.....	36	43

## KANSAS STATE AGRICULTURAL COLLEGE.

Selected major and minor electives, appropriate for students specializing in agronomy, are included.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
College rhetoric.....	6	6	Chemistry (organic).....	3	3½
Composition and literature.....	4	4	Chemistry (quantitative).....	2	3
Chemistry (general).....	10	10	Agricultural physics.....	3	3
Botany (general).....	3	3	Zoology (general).....	5	6
Plant physiology.....	3	3	Dairying (elements).....	3	3½
Plant propagation.....	3	3	Anatomy and physiology.....	5	6
Live stock types.....	3	4	Grain crop production.....	3	3½
Dairy judging.....	1	1½	Forage crop production.....	3	3½
Library methods.....	1	1	Plant pathology.....	3	4
Military science.....	2	3	Farm poultry.....	2	2½
			Orcharding.....	2	2½
			Military science.....	2	3
Total.....	30	35½	Total.....	36	44
JUNIOR YEAR.			SENIOR YEAR.		
Principles of feeding.....	3	3	Major elective:		
Plant breeding.....	3	4	Farm management *.....	5	6
Soils.....	4	4½	Grain crops.....	2	2½
Soil fertility.....	3	3½	Forage crops *.....	2	2½
Agricultural microbiology.....	3	4	Dry land farming.....	3	3½
Agricultural journalism.....	1	1	Minor elective:		
Entomology (general).....	3	3½	Milk production *.....	3	3½
Elective (limited).....	6	6½	Pork production.....	2	2½
Elective (free).....	6	6½	Farm motors.....	6	7
			Elective (free).....	9	11
Total.....	36	44½	Total.....	32	38



## UNIVERSITY OF KENTUCKY.

In the following outline six courses have been added to meet the requirements of the agronomy option.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Univer- sity credits.	SOPHOMORE YEAR.	Univer- sity credits.
Stock judging.....	6	Forage crops *.....	3
Botany (morphology).....	4	Cereal crops.....	4
Botany (systematic).....	4	English literature *.....	4
Chemistry (inorganic).....	11	Chemistry (agricultural).....	5
English composition.....	6	Entomology.....	4
Military science.....	3	Horticulture (elementary).....	3
Physical training (gymnastics).....	2	Zoology.....	4
		Geology.....	3
		Anatomy and physiology of farm ani- mals.....	3
		Physical training.....	2
		Military science.....	3
Total.....	36	Total.....	35

JUNIOR YEAR.	Univer- sity credits.	SENIOR YEAR.	Univer- sity credits.
Economics (agricultural).....	3	Farm engineering *.....	4
Soil physics.....	4	Soil physics (advanced) *.....	4
Soil fertility.....	5	Farm management (advanced) *.....	3
Bacteriology.....	4	Field crops *.....	2
Pomology.....	4	Soil fertility (advanced) *.....	2
Special crops *.....	4	Elective (approved).....	20
Grain judging.....	2		
Farm management.....	3		
Farm mechanics *.....	3		
Farm machinery.....	3		
Elective (approved).....	2		
Total.....	36	Total.....	35

## LOUISIANA STATE UNIVERSITY.

In the following outline six courses have been added to the work of the junior and senior years to meet the major option requirements.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Univer- sity cred- its.	Semester hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Univer- sity cred- its.	Semester hours (2-hr. lab. basis).
Composition and literature.....	6	6	Chemistry (general).....	8	10
Algebra.....	3	3	Physics.....	7	8
Trigonometry.....	3	3	Farm crops.....	2	3
Botany (general).....	6	6	Forage crops.....	2	3
Stock breeding and judging.....	7	8	Zoology (general).....	6	8
Farm machinery.....	6	8	Horticulture (principles).....	5	6
Military science.....	4	5	Military science.....	4	5
Total.....	36	41	Total.....	37	43

JUNIOR YEAR.	Univer- sity cred- its.	Semester hours (2-hr. lab. basis).	SENIOR YEAR.	Univer- sity cred- its.	Semester hours (2-hr. lab. basis).
Dairying.....	4	5	Farm management *.....	4	4
Feeds and feeding.....	5	6	Farm crops (advanced) *.....	3	4
Soil physics.....	4	5	Forage crops (advanced) *.....	3	4
Soil fertility *.....	4	5	Soil physics (advanced) *.....	4	6
Drainage *.....	4	5	Elective (approved).....	14	18
Farm machinery (power) *.....	4	5			
Elective (approved).....	6	8			
Total.....	32	38	Total.....	30	36

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## UNIVERSITY OF MAINE.

FRESHMAN YEAR.	Un- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Un- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).
Field crops.....	2	2	Soils.....	3	3½
Chemistry (general).....	9	9	Field crops.....	3	3
Drawing.....	2	3	Livestock management.....	2	2
Types and breeds of livestock.....	2	2	Livestock judging.....	1	1
Livestock judging.....	1	1	Biochemistry.....	2	2
Botany (general).....	4	4	Biology.....	2	2
Public speaking.....	2	2	Entomology.....	4	4
English composition.....	4	4	Chemistry (organic).....	3	3
Modern language.....	5	5	Pomology.....	3	3½
Zoology (general).....	4	4	Trigonometry.....	5	5
Physical training (gymnastics).....	1½	3	Poultry.....	5	5
Military art.....	2	3	Military art.....	2	3
Total.....	38½	42	Total.....	40	42

JUNIOR YEAR.			SENIOR YEAR.		
Field crops.....	2	2	Soil fertility.....	2	2
Field crops (judging).....	2	2	Root crops.....	2	2
Forage crops.....	2	2	Farm management.....	3	3½
Crop improvement.....	2	2	Agricultural engineering (general).....	6	7
Dairying (general).....	4	4	Farm accounts.....	2	2
Livestock feeding.....	2	2	Elective (approved).....	16½	18
Chemistry (agricultural).....	2	2			
Bacteriology.....	5	5			
Botany (general).....	5	5			
Plant physiology and pathology.....	5	5			
Composition.....	2	2			
Literary types.....	2	2			
Electives (approved).....	5	5½			
Total.....	40	40½	Total.....	31½	34½

## MARYLAND STATE COLLEGE OF AGRICULTURE.

(Subjects followed by asterisk (\*) not absolutely required.)

FRESHMAN YEAR.	College credits.	Semes- ter- hours. (2-hr. lab. basis.)	SOPHOMORE YEAR.	College credits.	Semes- ter- hours. (2-hr. lab. basis.)
Trigonometry.....	5	3½	Composition.....	6	4
Rhetoric and composition.....	15	10	Public speaking.....	3	2
History (American)*.....	9	6	Modern language.....	9	6
Modern language.....	9	6	Farm crops.....	3	2
Farm crops.....	4	2½	Soils.....	8	5½
Livestock breeds.....	3	2	Fertilizers.....	4	2½
Livestock management.....	5	3½	Pomology.....	6	4
Botany (general).....	5	3½	Vegetable culture.....	7	4½
Zoology (general).....	8	5½	Landscape gardening.....	4	2½
Chemistry (general).....	10	6½	Plant histology.....	4	2½
Drawing (free-hand).....	2	1½	Plant physiology.....	7	4½
Military instruction.....	6	4	Entomology.....	4	2½
			Chemistry (inorganic).....	8	5½
			Chemistry (qualitative).....	8	5½
			Military instruction.....	6	4
Total.....	81	54	Total.....	81	54

JUNIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis.)	SENIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis.)
Physics.....	12	8	English composition.....	3	2
Composition.....	5	2½	Political economy.....	12	8
Public speaking.....	3	2	Genetics (crops).....	6	4
Civil government.....	6	4	Genetics (horticulture).....	6	4
Business law.....	3	2	Soils (advanced).....	4	2½
Psychology.....	4	2½	Farm management.....	8	5½
Soils (advanced).....	2	1½	Dairy management.....	4	2½
Grain judging.....	1	1	Poultry.....	3	2
Animal nutrition.....	4	2½	Plant anatomy and physiology.....	3	2
Stock judging.....	4	2½	Animal diseases.....	5	3½
Plant pathology.....	4	2½	Forestry.....	4	2½
Geology.....	5	3½	Chemistry (agricultural).....	6	4
Chemistry (organic).....	4	2	Farm drainage.....	2	1½
Bacteriology.....	8	5½	Farm machinery.....	4	2½
Surveying.....	4	2½	Farm buildings.....	3	2
Drawing (mechanical).....	2	1½	Thesis.....	2	1½
Woodwork.....	2	1½	Military instruction.....	3	2
Military instruction.....	3	2			
Total.....	74	52	Total.....	78	52

### MASSACHUSETTS AGRICULTURAL COLLEGE.

The institution's published outlines are regarded as suggestive only. In the suggested agronomy schedule presented here four nontechnical courses have been added to meet group requirements. Since the preparation of this statement the total requirement for graduation has been increased by 14 term-hours or 9½ semester-hours.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis.)	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis.)
Chemistry (general).....	3	2	Physics.....	7	4½
Chemistry (inorganic agricultural).....	3	2	Zoology.....	3	2
Chemistry (organic agricultural).....	3	2	Botany.....	6	4
Algebra.....	7	4½	English (literature).....	6	4
Trigonometry (solid).....	3	2	Economics (agricultural).....	3	2
Trigonometry.....	3	2	Sociology (rural).....	3	2
Mensuration.....	2	1½	Soils and fertilizers.....	5	3½
Modern language.....	9	6	Chemistry (qualitative).....	6	4
English literature.....	9	6	Modern language.....	9	6
Farm crops.....	1	1	Geology.....	5	3½
Live stock (types).....	1	1	Physical education.....	1	1 (1)
Poultry.....	1	1	Military tactics.....	2	1½
Pomology.....	1	1	Military drill.....	2	1 (2)
Public speaking.....	3	2			
Geology (agricultural).....	3	2			
Botany (general).....	3	2			
Hygiene.....	1	1			
Gymnastics.....	1	1 (1)			
Military tactics.....	2	1½			
Military drill.....	2	1 (2)			
Total.....	60	41	Total.....	60	41
JUNIOR YEAR.			SENIOR YEAR.		
Field and forage crops.....	5	3½	Soils.....	5	3½
Field crops (advanced).....	5	3½	Fertilizers.....	5	3½
Chemistry (organic).....	16	10	Farm management.....	5	3½
Economics (general)*.....	5	3	Live stock (feeding).....	3	2
English (literature)*.....	5	3	Cooperation in agriculture*.....	5	3½
History (economic)*.....	3	2	Elective (free).....	27	18
Physical education.....	1	1 (1)			
Military science.....	2	1½			
Military drill.....	2	1 (2)			
Elective (free).....	6	4			
Total.....	50	34½	Total.....	50	33½

The figures in parentheses are the results of two adjustments—one in changing from term-hours to semester-hours and the other in making allowance for extra laboratory or field work required in the subjects concerned.

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## MICHIGAN AGRICULTURAL COLLEGE.

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Live stock, types, breeds.....	3	2	Bacteriology.....	6	4
Agriculture (economic history).....	2	1 1/2	Surveying.....	3	2
Economics.....	3	2	Public speaking.....	6	4
Botany (morphology).....	4	2 1/2	Dairying.....	3	2
Botany (systematic).....	4	2 1/2	Fruit growing.....	3	2
Botany (physiology).....	3	2	Plant propagation.....	2	1 1/2
Chemistry (general).....	5	3 1/2	Physics.....	10	6 1/2
Chemistry (qualitative).....	5	3 1/2	Soils.....	2	1 1/2
Chemistry (organic).....	5	3 1/2	Soil fertility.....	3	2
Composition.....	9	6	Forage crops.....	2	1 1/2
Shop work.....	4	1 (4)	Zoology (general).....	5	3 1/2
Cereal crops.....	3	2	Zoology (physiology).....	5	3 1/2
Forestry.....	3	2	Entomology.....	5	3 1/2
Mathematics (agricultural).....	4	2 1/2	Geology.....	5	3 1/2
Trigonometry (plane).....	3	2	Military science.....	3	1 (2)
Military science.....	3	1 (3)			
Total.....	63	44 1/2	Total.....	63	43
JUNIOR YEAR.			SENIOR YEAR.		
Live stock (breeds).....	3	2	Grain judging.....	5	3 1/2
Live stock (feeding).....	5	3 1/2	Crop improvement.....	5	3 1/2
Live stock (breeding).....	2	1 1/2	Special crops.....	5	3 1/2
Farm management.....	3	2	Soil physics.....	5	3 1/2
Poultry.....	2	1 1/2	Soil fertility.....	5	3 1/2
Elective (limited).....	45	30	Soil surveying.....	5	3 1/2
Military science.....	3	3	Elective (limited).....	30	20
Total.....	63	43	Total.....	60	40

The figures in parentheses are the results of two adjustments—one in changing from term-hours to semester-hours and the other in making allowance for extra laboratory or field work required in the subjects concerned.

## UNIVERSITY OF MINNESOTA.

(Subjects followed by asterisk (\*) not absolutely required.)

FRESHMAN YEAR.	University credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	University credits.	Semester-hours (2-hr. lab. basis).
Botany (general).....	3	4	Economics (principles).....	3	3
Botany (structural).....	3	4	Economics (agricultural)*.....	3	3
Rhetoric.....	6	6	Argumentation.....	6	6
Chemistry (general and qualitative).....	6	8	Zoology (general).....	6	8
Algebra (higher).....	3	3	Drawing (mechanical).....	3	3
Horticulture (general).....	3	3	Physics (general)*.....	6	6
Live stock (breeds and types).....	3	3	Bacteriology.....	3	4
Dairy husbandry.....	3	3	Chemistry (agricultural).....	3	3
Farm crops.....	3	3	American Government.....	3	3
History (Industrial).....	3	3	Military drill.....	0	2
Military drill.....	0	2			
Hygiene and freshman lectures.....	0	1			
Total.....	36	43	Total.....	36	41
JUNIOR YEAR.			SENIOR YEAR.		
Farm crops.....	3	3 1/2	Farm management.....	6	6
Farm management.....	3	3	Genetics.....	2	3
Entomology (economic).....	3	3 1/2	Plant breeding.....	3	3
Animal nutrition.....	3	3	Grain judging.....	3	3
Dairy stock feeding and management.....	3	2	Farm structures.....	3	3 1/2
Plant pathology.....	3	3 1/2	Weeds and seeds.....	3	4
Veterinary medicine.....	3	3	Live stock feeding.....	3	3
Soil physics and management.....	3	3	Farm machinery.....	3	3
Soil fertility.....	3	3	Elective (free).....	9	9 1/2
Farm engineering.....	3	3			
Elective (free).....	6	6 1/2			
Total.....	36	38	Total.....	36	38



## MISSISSIPPI AGRICULTURAL AND MECHANICAL COLLEGE.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Agricultural (general).....	5	3½	Botany (general).....	3	5½
Field crops.....	5	3½	Plant diseases.....	4	2½
Soils.....	5	3½	Argumentation.....	3	2
Farm botany.....	4	2½	Exposition.....	3	2
Drawing (free-hand).....	2	1½	English literature.....	3	2
Drawing (mechanical).....	1	½	Algebra.....	6	4
Rhetoric.....	9	6	Trigonometry.....	3	2
History.....	9	6	Live stock (breeds).....	5	3½
Geometry.....	10	6½	Chemistry (inorganic).....	14	12
Shopwork.....	2	1½	Dairying.....	4	2½
Physics.....	4	5½	Zoology.....	5	3½
Geology.....	3	2	Plant propagation.....	4	2½
Poultry.....	1	½	Farm accounts.....	2	1½
Farm machinery.....	2	1½	Military science.....	7	4½
Veterinary pathology.....	4	2½			
Physical education (gym).....	3	2			
Personal hygiene.....	1	½			
Military science.....	3	2			
Total.....	77	51½	Total.....	75	50
JUNIOR YEAR.			SENIOR YEAR.		
Soil management (fertility).....	6	4	Forestry.....	3	2
Forage crops.....	5	3½	Civil government.....	3	2
Geology.....	4½	3	Entomology.....	4	2½
Live stock feeding.....	5	3½	Bacteriology.....	4	2½
Chemistry (organic).....	6½	4½	Surveying and drainage.....	5½	3½
Chemistry (agricultural).....	6½	4½	Farm organization.....	4	2½
Dairying.....	6	4	Plant breeding*.....	4	2½
Entomology.....	8	5½	Soil fertility*.....	4	2½
Horticulture (general).....	4	2½	Grasses and legumes*.....	4	2½
Veterinary anatomy and physiology.....	5	3½	Research (thesis)*.....	7½	5
Farm machinery.....	5	3½	Elective (approved).....	21½	14½
Economics (rural).....	4	2½	Military science.....	3	2
Poultry.....	4	2½			
Military science.....	3	2			
Total.....	72½	48½	Total.....	67½	45

## UNIVERSITY OF MISSOURI.

To meet the major requirements six courses in farm crops have been included in the following schedule:

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Live stock types.....	3	Bacteriology.....	3
Botany (general).....	5	Chemistry (qualitative).....	5
Chemistry (inorganic).....	5	Chemistry (organic).....	3
Composition and rhetoric.....	6	Entomology.....	3
Horticulture (general).....	3	Dairying.....	3
Physics.....	5	Farm crops.....	5
Zoology.....	5	Geology.....	3
Military science.....	2	Elective.....	5
		Military science.....	2
Total.....	34	Total.....	32
JUNIOR YEAR.		SENIOR YEAR.	
Animal nutrition.....	3	Grain judging.....	3
Field-crop improvement*.....	3	Field-crop management.....	2
Plant physiology.....	5	Cereal crops.....	3
Social science.....	6	Forage crops.....	3
Chemistry (agricultural).....	3	Crop improvement.....	3
Soils (physics and fertility).....	5	Special problems.....	3
Elective.....	7	Elective.....	10
Total.....	31	Total.....	27

MONTANA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS.

FRESHMAN YEAR.	College credits.	Semester hours, 2 hour lab. basis.	SOPHOMORE YEAR.	College credits.	Semester hours, 2 hour lab. basis.
English composition.....	6	6	Composition (exposition).....	4	4
Chemistry (general).....	8	9	Chemistry (organic).....	5	5
Botany (general).....	5	4	Chemistry (agricultural).....	5	5
Mathematics.....	3	3	Forage crops.....	4	4
Dairying.....	3	3	Field crops.....	4	4
Physics (agricultural).....	5	5	Horticulture.....	4	4
Plant propagation.....	3	3	Zoology.....	3	3
Live stock (types).....	3	3	Entomology (economic).....	4	4
Military drill.....	2	2	Geology.....	3	3
			Military drill.....	2	2
Total.....	38	40	Total.....	38	41

JUNIOR YEAR.	College credits.	Semester hours, 2 hour lab. basis.	SENIOR YEAR.	College credits.	Semester hours, 2 hour lab. basis.
Economics.....	4	4	Farm management.....	4	4
Soil physics.....	5	5	Soil management.....	2	2
Soil fertility.....	3	3	Grain judging.....	2	2
Bacteriology.....	5	5	Surveying.....	3	3
Plant physiology.....	4	4	Farm mechanics.....	3	3
Organic evolution.....	3	3	Farm accounts.....	2	2
Live stock (breeds).....	4	4	Animal diseases.....	4	4
Elective (free).....	9	10	Plant pathology.....	4	4
			Genetics.....	4	4
			Thesis.....	4	4
			Elective (free).....	5	5
Total.....	37	40	Total.....	37	39

UNIVERSITY OF NEBRASKA.

The following outline includes eight courses to meet major option requirements:

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	University credits.	Semester hours (2-hr. lab. basis).	SOPHOMORE YEAR.	University credits.	Semester hours (2-hr. lab. basis).
Botany (elementary)*.....	6	10	Chemistry (organic).....	5	6
Chemistry (inorganic).....	6	8	Zoology.....	6	9
Composition and rhetoric.....	4	4	Forage crops (management).....	3	4
Live stock (breeds).....	4	4	Soil physics.....	4	4
Shopwork.....	4	6	Fruit growing.....	2	2
Geology.....	3	3	English (composition)*.....	6	4
Dairying.....	4	5	Military science.....	2	3
Military science.....	2	3	Elective.....	4	5
Total.....	33	43	Total.....	32	37

JUNIOR YEAR.	University credits.	Semester hours (2-hr. lab. basis).	SENIOR YEAR.	University credits.	Semester hours (2-hr. lab. basis).
Farm organization.....	3	3	American government*.....	6	6
Economics.....	3	3	Farm machinery and spraying machinery*.....	3	4
Economics (rural).....	2	2	Soil fertility.....	4	4
Physics*.....	6	9	Soil management*.....	2	2
Cereal crop management*.....	4	4	Plant pathology*.....	2	6
Soil chemistry and biology*.....	4	4	Entomology (economic)*.....	2	6
Field crop practices*.....	3	3	Elective (free).....	7	9
Elective (free).....	8	10			
Total.....	32	37	Total.....	28	37

## UNIVERSITY OF NEVADA.

The following represents the agronomy-horticulture option:

FRESHMAN YEAR.	Uni- ver- sity cred- its.	Semes- ter- hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Uni- ver- sity cred- its.	Semes- ter- hours (2-hr. lab. basis).
Composition and rhetoric.....	6	6	Chemistry (organic).....	2	2
Zoology.....	4	4	Chemistry (quantitative).....	2	2
Botany (general).....	1	4	Chemistry (agricultural).....	8	8
Agriculture (general).....	3	3	Live-stock judging.....	4	4
Live-stock breeds.....	3	3	Live-stock feeding.....	3	3
Chemistry (inorganic).....	4	4	Forage crops.....	4	4
Chemistry (qualitative).....	1	4	Dairying.....	3	3
Shopwork.....	2	2	Physics.....	4	4
Elective (free).....	6	6	Elective (free).....	6	6
Military science.....	2	2	Military science.....	2	2
Total.....	38	41	Total.....	38	41
JUNIOR YEAR.			SENIOR YEAR.		
Surveying.....	4	4	Farm management.....	5	5
Rural hygiene.....	4	4	Irrigation.....	5	5
Farm structures.....	4	4	Teaching agriculture.....	3	3
Farm machinery.....	3	3	Veterinary pathology.....	3	3
Cereals.....	4	4	Plant physiology.....	3	3
Botany (taxonomy).....	3	3	Plant breeding.....	3	3
Horticulture (general).....	3	3	Electives (free).....	14	14
Zoology (economic).....	3	3			
Elective (free).....	8	8			
Total.....	36	39	Total.....	36	39

## NEW HAMPSHIRE COLLEGE.

The following represents the required work for the horticultural option:

FRESHMAN YEAR.	College credits.	Semes- ter- hours (2-hr. lab. basis.)	SOPHOMORE YEAR.	College credits.	Semes- ter- hours (2-hr. lab. basis.)
History of agriculture.....	1	1	Farm poultry.....	3	3
Chemistry (inorganic).....	6	6	Principles of forestry.....	3	3
English composition.....	6	6	Economic entomology.....	3	3
Algebra and trigonometry.....	4	4	Agricultural engineering.....	3	3
Zoology.....	6	6	Live stock (breeds).....	3	3
Drawing.....	2	2	Chemistry (qualitative).....	5	5
Surveying.....	2	2	Dairying.....	3	3
Botany.....	6	7	Vegetable gardening.....	2	3
Military science.....	4	4	Pomology.....	3	3
			Physics.....	4	4
			Military science.....	4	4
Total.....	37	39	Total.....	36	39
JUNIOR YEAR.			SENIOR YEAR.		
Field crops.....	3	3	Farm management.....	3	3
Soils.....	3	3	Fertilizers.....	3	3
Plant physiology.....	3	3	Economics.....	3	3
Greenhouse construction and man- agement.....	3	3	Economics (agricultural).....	2	2
Geology.....	3	3	Evolution of plants.....	2	2
Landscape gardening.....	3	3	Meteorology.....	2	2
Nursery management.....	3	3	Plant pathology.....	3	3
Floriculture.....	2	2	Pomology.....	4	4
Vegetable forcing.....	3	3	Horticulture seminar.....	1	1
Bacteriology.....	3	3	Elective (approved).....	11	12
Shopwork.....	3	3			
Elective (approved).....	4	4			
Total.....	36	39	Total.....	35	37

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## RUTGERS COLLEGE.

The following represents the required work for the soil fertility option.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR	College credits.	Semester-hours (2-hr. lab. basis.)	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis.)
Rhetoric and composition.....	2	2	American literature.....	2	2
English literature.....	4	4	English literature.....	2	2
Algebra.....	3	3	Modern language.....	6	6
Geometry.....	5	5	Physics.....	6	7
Trigonometry.....	2	2	Chemistry (qualitative).....	4	4
Chemistry (general).....	6	7	Soils.....	3	3
Modern language.....	8	8	Farm crops.....	3	3
Drawing.....	4	5	Dairying.....	2	2
Hygiene.....	1	1	Poultry.....	2	2
Military science.....	2	3	Plant physiology.....	3	3
			Botany (general).....	3	3
			Military science.....	2	3
Total.....	37	40	Total.....	38	43
JUNIOR YEAR.			SENIOR YEAR.		
History.....	6	6	Economics.....	4	4
Fertilizers.....	2	2	Constitutional law.....	4	4
Chemistry (quantitative).....	1	5	Soil fertility.....	12	14
Plant propagation.....	3	3	Soil microbiology.....	6	7
Bacteriology.....	3	3	Geology (rocks and soils).....	6	7
Zoology.....	5	6	Thesis.....	4	5
Entomology.....	5	3			
Plant pathology.....	2	2			
Live-stock types.....	3	3			
Pomology.....	4	4			
Total.....	35	40	Total.....	36	41

## NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANICAL ARTS.

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Rhetoric and composition.....	6	Chemistry (organic).....	2
Chemistry (general).....	9	Chemistry (agricultural).....	5
Botany (general).....	7	Dairying.....	3
Live stock (types).....	5	Cereals.....	3
Farm motors.....	3	Forest crops.....	3
Physics (agricultural).....	3	Bacteriology.....	3
Agronomy (elementary).....	2	Zoology (general).....	3
Plant propagation.....	2	Physiology (human).....	4
Military science.....	3	Surveying.....	4
		Farm machinery.....	2
		Vegetable gardening.....	3
		Landscape gardening and floriculture.....	2
		Military science.....	3
Total.....	41	Total.....	42
JUNIOR YEAR.		SENIOR YEAR.	
Soil physics.....	3	Geology.....	4
Soil fertility.....	3	Farm management.....	6
Fruit growing.....	3	Sociology.....	2
Stock feeding.....	3	Economics.....	3
Entomology (general).....	3	Thesis.....	5
Entomology (economic).....	2	Plant breeding.....	3
Veterinary science.....	3	Agronomy (experimental).....	1
Irrigation.....	3	Agronomy (seminar).....	2
Grain judging.....	1	Elective (limited).....	6
Seeds.....	1		
Plant pathology.....	3		
Plant histology.....	3		
Total.....	31	Total.....	32



## CORNELL UNIVERSITY.

The following table shows the distribution of the required work in the four-year agricultural curriculum:

FRESHMAN YEAR.	SOPHOMORE YEAR.	JUNIOR YEAR.	SENIOR YEAR.
<i>Hours.</i>	<i>Hours.</i>	<i>Hours.</i>	
English..... 8	Geology..... 3	Political science..... 6	
Chemistry..... 6	Physics..... 5		
Biology..... 3	Physiology..... 3		
Zoology..... 6	Chemistry, mathematics, or bacteriology..... 6		
Botany..... 6	Drill.....		
Natural history of the farm..... 1			
Drill.....			

The following outline includes the above-required work and, in addition, a selected list of elective courses recommended for students specializing in farm crops:

[Subjects followed by asterisk (\*) not absolutely required.]

SOPHOMORE YEAR.	University credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	University credits.	Semester-hours (2-hr. lab. basis).
English.....	8	8	Geology.....	3	3½
Chemistry (inorganic).....	6	6½	Chemistry (agricultural).....	4	4
Chemistry (qualitative and quantitative).....	5	6½	Botany (general).....	6	6½
Biology (general).....	6	6½	Plant physiology.....	4	4½
Physics.....	5	5	Economics.....	6	6
The farm (agricultural environment).....	2	2½	Meteorology.....	3	3½
Military science.....	0	3	Pomology.....	3	3½
			Military drill.....	0	3
Total.....	32	37½	Total.....	29	33½
JUNIOR YEAR.			SENIOR YEAR.		
Farm crops*.....	4	4½	Farm crops (advanced)*.....	3	3
Special crops*.....	3	3½	Genetics*.....	3	3
Soil management*.....	3	3½	Farm management*.....	4	4½
Vegetable gardening*.....	2	2½	Soil technology*.....	3½	3½
Bacteriology*.....	4	5½	Plant breeding*.....	4	4½
Plant pathology*.....	3	4½	Rural economy*.....	3	3
Farm management*.....	2	2½	Animal husbandry*.....	5	5½
Botany*.....	2	2½	Entomology (general)*.....	3	3½
Rural engineering*.....	6	6½	Plant pathology*.....	3	3½
Total.....	29	34½	Total.....	31	33½

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## NORTH CAROLINA COLLEGE OF AGRICULTURE AND ENGINEERING.

(Subjects followed by asterisk (\*) not absolutely required.)

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Botany (general).....	6	Farm equipment.....	2
Chemistry (inorganic).....	6	Dairying.....	3
Drawing.....	2	Botany (general).....	5
Woodworking.....	2	Chemistry (qualitative).....	6
Composition and rhetoric.....	3	Rhetoric.....	3
American literature.....	3	Public speaking.....	3
Algebra.....	5	Geology.....	2
Geometry.....	5	Plant propagation.....	3
Zoology (general).....	6	Physics (agricultural).....	6
Military drill.....	4	Veterinary anatomy and physiology.....	5
		Zoology (general).....	2
		Military drill.....	4
Total.....	42	Total.....	44

JUNIOR YEAR.	Semester-hours.	SENIOR YEAR.	Semester-hours.
Farm crops.....	6	Farm crops.....	12
Live stock (breeds).....	3	Farm management.....	3
Live stock (feeding).....	3	Animal breeding.....	3
Chemistry (quantitative).....	2	Plant breeding.....	3
Chemistry (agricultural).....	2	Chemistry (organic).....	6
English literature.....	6	Economics (agricultural).....	6
Pomology.....	6	Soil fertility.....	3
Vegetable gardening.....	3	Drainage.....	3
Poultry.....	3	Entomology (economic).....	3
Soils.....	6	Elective (free).....	6
Modern language*.....	4		
Economics*.....	4		
Total.....	48	Total.....	48

## NORTH DAKOTA AGRICULTURAL COLLEGE.

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Gas engines.....	3	2	Dairying (elements).....	3	2
Composition.....	1	24	Animal husbandry (foods and feeding).....	3	2
Argumentation.....	4	24	Veterinary science (general).....	14	94
Chemistry (general).....	5	31	Farm crops.....	5	31
Chemistry (inorganic).....	4	24	Chemistry (quantitative).....	5	31
Chemistry (qualitative).....	6	4	Soil physics.....	5	31
Judging live stock.....	4	24	Soil management (fertility).....	5	31
Breeds of live stock.....	10	64	Zoology (general).....	9	6
Botany (general).....	13	84	Chemistry (organic).....	4	24
Library practice.....	1	6	Horticulture (general).....	2	14
Plant propagation.....	4	24	Plane trigonometry.....	2	14
Farm crops.....	3	2	Surveying.....	2	14
Military drill.....	6	1	Military drill.....	6	4
Total.....	67	444	Total.....	72	48

JUNIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SENIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Plant physiology.....	4	24	Entomology.....	4	24
Plant pathology.....	4	24	Bacteriology (general).....	4	24
Physics (elementary).....	10	64	Soil biology.....	5	31
Genetics (general).....	6	31	Farm management.....	5	31
Political economy.....	4	24	Methods of investment.....	4	24
Rural economics.....	4	24	Thesis.....	0	4
Soil fertility.....	8	64	Genetics (general).....	5	31
English literature.....	4	24	Elective (free).....	10	64
Total.....	43	281	Total.....	43	281

## OHIO STATE UNIVERSITY.

The following outline shows a tentative schedule for a student specializing in farm crops. Selected courses are included in the sophomore, junior, and senior years to meet the prescribed electives and in the last two years to satisfy the major requirements.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Un- iversity credits.	Semes- ter- hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Un- iversity credits.	Semes- ter- hours (2-hr. lab. basis).
Chemistry (general).....	4	10	Chemistry (agricultural).....	5	6
Zoology (general).....	6	6	Botany (general).....	8	9
English composition.....	4	1	Soils (elementary).....	5	6
Mathematics.....	3	3	Field crops (production)*.....	4	4
Drawing (mechanical).....	2	2	Entomology (economic)*.....	3	3
Shop work.....	1	5	Geology (local)*.....	3	3
Physics.....	3	3	Military drill.....	2	2
Geology.....	3	3	Elective (free).....	6	7
Survey of agriculture.....	1	1			
Physical education (gymnastic).....	2	2			
Hygiene.....	0	1			
Military drill.....	2	2			
Total.....	38	42½	Total.....	36	40
JUNIOR YEAR.			SENIOR YEAR.		
Economics.....	6	6	Horticulture (farm)*.....	4	4
Farm engineering*.....	4	4	Farm management*.....	4	4
Live stock (types)*.....	4	4	Crop production (advanced)*.....	6	7
Dairying*.....	1	4	Seminar (farm practice).....	2	2
Entomology (economic)*.....	3	3	Elective (free).....	10	11
Cereal crops.....	2	2	Elective (limited).....	8	9
Forage crops.....	2	2			
Field crop improvement.....	3	4			
Seminar (farm practice).....	2	2			
Elective (free).....	4	4½			
Total.....	31	35½	Total.....	34	37

## OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE.

FRESHMAN YEAR.	College credits.	Semes- ter- hours (2 hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semes- ter- hours (2-hr. lab. basis).
Composition.....	6	6	News writing (English).....	2	2
Chemistry (inorganic).....	7½	9	Chemistry (qualitative).....	2	2½
Botany (general).....	6½	8	Chemistry (quantitative).....	4	5
Farm mechanics.....	2½	3	Chemistry (organic).....	3	3½
Dairying.....	3½	3	Fruit growing.....	2½	3
Live stock (types).....	3	3½	Live stock (breeds).....	3½	4
Vegetable gardening.....	2½	3	Cereal crops.....	3½	4
Public speaking.....	1½	2	Forage crops.....	2½	3
Physical training.....	2	3	Plant physiology.....	2½	3
Military science.....	2	3	Bacteriology.....	3½	4
			Zoology (general).....	3½	4
			Military science.....	2	3
Total.....	37½	43½	Total.....	34½	41
JUNIOR YEAR.			SENIOR YEAR.		
Farm motors.....	3½	4	Farm crops (advanced).....	3½	4
Farm structures.....	2½	3	Farm management.....	3½	4
Cotton production.....	2½	3	Farm accounts.....	1½	2
Genetics.....	2	2	Crop improvement.....	2½	3
Plant breeding.....	2	2	Seminar.....	2	2
Soils.....	3½	4	Agriculture (general).....	3	3½
Soil fertility.....	6	6	Agricultural education.....	2	2
Entomology.....	3½	4	Thesis.....	4	4
Animal nutrition.....	3	3	Elective (free).....	9	11
Poultry.....	2	2			
Basic organization.....	3	3			
Total.....	32½	39	Total.....	30½	34½

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## OREGON AGRICULTURAL COLLEGE.

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
English prose.....	6	6	Farm accounts.....	2	2
Chemistry (general).....	6	8	Economic zoology.....	6	7
Physics (general).....	3	4	Agricultural chemistry.....	6	8
Botany (agricultural).....	6	7½	Bacteriology.....	3	3
Crop production.....	3	3½	Fruit growing.....	2	3
Stock judging.....	2	3	Landscape gardening.....	1½	1½
Stock management.....	3	3	Vegetable growing.....	1½	1½
Farm surveying.....	2	2	Soils.....	0	4
Library practice.....	1	1	Dairying (elements).....	3	3
Hygiene.....	1	1	Poultry keeping.....	2	2
Physical education.....	1	2	Physical education.....	1	2
Military drill.....	2	4	Military drill.....	2	4
Total.....	35½	41½	Total.....	36	45

JUNIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SENIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Agricultural economics.....	3	3	National government.....	3	3
Plant chemistry.....	2	2	State and municipal government.....	3	3
Agricultural bacteriology.....	3	3	Agrostology.....	3	3
Plant pathology.....	2	3	Forage crops.....	2	2
Diseases of field crops.....	1	1	Soil fertility.....	3	3
Entomology.....	2	3	Farm management.....	3	3
Cereal crops.....	4	5	Crop breeding.....	2	2
Land drainage.....	3	3½	Crop work.....	2	2
Crop improvement.....	3	3½	Feeds and feeding.....	3	3
Soil physics.....	4	5	Potato growing.....	1	1
Military drill.....	2	4	Elective (approved).....	6	7
Military science.....	2	2			
Elective (free).....	3	3			
Total.....	31	41	Total.....	31	32

## PENNSYLVANIA STATE COLLEGE.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Botany (general).....	9	9	Bacteriology (agricultural).....	3	3
Livestock (breeds).....	3	3	Chemistry (organic).....	2	2
Modern language.....	6	6	Chemistry (qualitative).....	2½	3
Algebra.....	2	2	Chemistry (agricultural).....	5	5
Trigonometry (plane).....	3	3	Soils.....	4	4
Composition.....	3	3	Genetics (general).....	2	2
Argumentation.....	3	3	Modern language.....	6	6
Chemistry (general).....	6	6½	Geology.....	3	3½
Dairying.....	2	2	Plant propagation.....	3	3
Military drill.....	1	2½	Composition.....	6	6
Military tactics.....	1	1	Physics.....	3	3½
Gymnasium drill.....	1	1	Military drill.....	1	2½
			Gymnasium drill.....	1	1
Total.....	40	42	Total.....	41½	44½

JUNIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SENIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Farm crops.....	6	6	Farm management.....	6	6
Soils.....	4	5	Crop production.....	2	2
Soil fertility.....	3	3	Seminar.....	2	2
Farm machinery.....	3	3½	Farm structures.....	3	3
History (American economic).....	6	6	Stock judging.....	2	2
Chemistry (agricultural)*.....	5	6	Vegetable gardening*.....	4	4
Zoology (general).....	3½	3½	Dairy cattle*.....	4	4
Entomology (general).....	4	4½	Economics.....	6	6
Plant breeding.....	2	2	Elective (free).....	7	8
Farm practice (seminar).....	6	6			
Total.....	42½	45½	Total.....	37	37



## UNIVERSITY OF PORTO RICO.

The following represents the required work of the curriculum in general agriculture:

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
English composition.....	6	Entomology.....	4
Animal husbandry.....	6	Botany.....	6
Agronomy.....	6	Breeds of animals.....	3
Elementary horticulture.....	6	Animal breeding.....	3
Pedagogy.....	6	Field crops.....	6
Farm mechanics.....	6	Agricultural chemistry.....	8
Entomology (general).....	4	Horticulture.....	6
Military science.....	3	Soils.....	4
		Military science.....	3
Total.....	43	Total.....	43
JUNIOR YEAR.		SENIOR YEAR.	
Farm machinery.....	6	Vegetable pathology.....	2
Tropical crops.....	6	Tropical crops.....	19
Horticulture.....	8	Bacteriology.....	4
Animal feeding.....	3	Thesis.....	3
Live stock judging.....	3	Elective.....	13
Farm management.....	3	Military science.....	3
Political economy.....	3		
Commercial law.....	3		
Elective.....	3		
Military science.....	3		
Total.....	41	Total.....	43

## RHODE ISLAND STATE COLLEGE.

The following represents the work required for the animal husbandry option:

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Rhetoric and composition.....	6	Newspaper work.....	1
Modern language.....	6	Argumentation.....	2
Algebra.....	23	Public speaking.....	1
Trigonometry.....	23	Modern language.....	6
Chemistry (general).....	8	Chemistry (organic).....	4
Botany (general).....	6	Chemistry (agricultural).....	4
Plant propagation.....	2	Physics.....	5
Drawing (freehand).....	1	Botany (agricultural).....	3
How to study.....	1	Zoology (general).....	8
Live stock (breeds).....	4	Surveying.....	3
Spraying and pruning.....	2	Geology.....	2
Vegetable gardening.....	2	Forage crops.....	2
Military drill.....	2	Military drill.....	2
Military tactics.....	1	Military tactics.....	1
Total.....	45½	Total.....	44
JUNIOR YEAR.		SENIOR YEAR.	
Modern essays.....	4	Political economy.....	23
Debating.....	2	Civil government.....	24
History (industrial).....	4	Shakespeare.....	24
Veterinary practice.....	3	Public speaking.....	2
Poultry.....	1	Agricultural experimentation.....	3
Soils and fertilizers.....	5½	Plant breeding.....	3
Farm crops.....	4	Bacteriology.....	3
Farm management.....	2	Stock feeding.....	6
Fruit culture.....	2	Stock breeding.....	3
Landscape gardening.....	3	Elective (free).....	3
Dairying.....	3	Military drill.....	16
Farm machinery.....	3	Military tactics.....	1
Elective (free).....	3		
Military drill.....	3		
Military tactics.....	1		
Total.....	42½	Total.....	47

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## CLEMSON COLLEGE.

FRESHMAN YEAR.	College credits.	Term hours.	Semester hours.	SOPHOMORE YEAR.	College credits.	Term hours.	Semester hours.
Geometry.....	10	10	6½	Trigonometry.....	5	5	3½
Algebra.....	5	5	3½	Composition and rhetoric.....	6	6	4
Composition and rhetoric.....	15	15	10	American literature.....	3	3	2
History.....	9	9	6	Physics.....	13	11	7½
Agriculture (general).....	6	6	4	Chemistry (general).....	16	12½	8½
Shopwork.....	12	6	4	Surveying.....	6	4½	3
Drawing.....	12	6	4	Zoology.....	11	7	4½
Botany (general).....	8	4	2½	Entomology.....	5	4	2½
Bookkeeping.....	4	2	1½	Plant pathology.....	5	3	2
Military drill.....	9	4½	3	Plant physiology.....	5	3	2
				Farm machinery.....	4	3	2
				Geology.....	2	1	¾
				Military drill.....	9	4½	3
Total.....	90	67½	45	Total.....	90	67½	45

JUNIOR YEAR.	College credits.	Term hours.	Semester hours.	SENIOR YEAR.	College credits.	Term hours.	Semester hours.
English literature.....	6	6	4	English literature.....	6	6	4
History (American).....	6	6	4	Economics.....	6	6	4
Chemistry (organic).....	4	4	2½	Geology.....	6	6	4
Chemistry (agricultural).....	2	2	1½	Bacteriology.....	6	4	2½
Chemistry (quantitative).....	9	4½	3	Common crops.....	4	3	2
Soils.....	8	6	4	Small grains.....	4	3	2
Forage crops.....	2	2	1½	Cotton.....	4	3	2
Cotton grading.....	2	1	¾	Plant breeding.....	2	2	1½
Veterinary anatomy and physiology.....	10	8	5½	Farm motors.....	5	3	2
Pomology.....	4	3	2	Drainage.....	4	3	2
Vegatable gardening.....	4	3	2	Farm management.....	9	7	4½
Entomology.....	2	1	¾	Truck farming.....	4	3	2
Live stock (breeds).....	7	5½	3½	Pomology.....	4	3	2
Dairying.....	10	7	4½	Animal feeding.....	4	3	2
Forestry.....	2	1	¾	Botany (taxinomic).....	5	3	2
Military tactics.....	3	3	2	Entomology (economic).....	2	2	1½
Military drill.....	9	4½	3	Plant diseases.....	2	1	¾
				Poultry.....	2	1	¾
				Teaching agriculture.....	2	1	¾
				Military drill.....	9	4½	3
Total.....	90	67½	45	Total.....	90	67½	45

## SOUTH DAKOTA STATE COLLEGE.

FRESHMAN YEAR.	College credits.	Semester hours. 2 hour lab. basis.	SOPHOMORE YEAR.	College credits.	Semester hours. 2 hour lab. basis.
Rhetoric.....	6	6	Botany (general).....	8	10
Chemistry (elementary).....	8	16	Chemistry (qualitative).....	8	4
Farm crops.....	4	5	Chemistry (organic).....	4	3½
Stock judging.....	3	4	Veterinary anatomy.....	2	2
Farm dairying.....	3	3	Extempore speaking.....	2	2
Breeds of live stock.....	3	3	Entomology.....	5	10
Modern language.....	8	8	Horticulture (general).....	2	2
Military tactics.....	2	3	Modern language.....	8	8
			Military science.....	1	1
			Military tactics.....	2	3
Total.....	37	47	Total.....	37	46½

JUNIOR YEAR.	College credits.	Semester hours. 2 hour lab. basis.	SENIOR YEAR.	College credits.	Semester hours. 2 hour lab. basis.
Zoology (general).....	8	10	Economics.....	3	3
Soils.....	4	6	Rural economics.....	3	3
Soil fertility.....	4	6	Heredity.....	3	3
Farm crops.....	4	5	Geology (agricultural).....	5	5
Psychology.....	3	3	Elective (free).....	20	24
English literature.....	6	6			
Elective (free).....	9	11			
Total.....	38	47	Total.....	34	38

## UNIVERSITY OF TENNESSEE.

The following outline includes, in addition to the prescribed work, four courses to meet major requirements:

[Subject followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Rhetoric and composition.....	3	Modern language.....	6
American literature.....	3	Chemistry (inorganic).....	3
Mathematics.....	6	Chemistry (qualitative).....	3
Modern language.....	6	Botany (agricultural).....	3
Botany (general).....	6	Heredity.....	3
Zoology (general).....	6	Live stock (breeds).....	3
Farm study (practice).....	2	Live stock (management).....	2
Military drill.....	5	Homology.....	3
		Dairying.....	4
		Soil fertility.....	3
		Military drill.....	3
Total.....	37	Total.....	37
JUNIOR YEAR.	Semester-hours.	SENIOR YEAR.	Semester-hours.
English literature.....	6	Animal breeding.....	3
Chemistry (quantitative).....	3	Plant pathology.....	3
Chemistry (organic).....	3	Economics.....	3
Geology.....	3	Economics (agricultural).....	3
Bacteriology.....	3	Foreign crops (advanced) *.....	6
Veterinary anatomy.....	3	Soil fertility *.....	6
Animal diseases.....	3	Plant breeding *.....	3
Forage and fiber crops.....	3	Economic entomology *.....	3
Cereal crops.....	3		
Animal nutrition.....	3		
Stock judging.....	3		
Total.....	36	Total.....	30

## . AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS.

[Subject followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Crop production.....	3	Live stock (breeds).....	3
Live stock (types).....	4	Poultry.....	2
Botany (general).....	8	Zoology.....	6
Chemistry (inorganic).....	8	Chemistry (organic).....	4
Rhetoric and composition.....	6	Geology.....	3
Dairying.....	3	English literature.....	6
Physics.....	6	Horticulture (general).....	4
Military science.....	2	Vegetable gardening.....	3
Military drill.....	2	Veterinary practice.....	6
		Military drill.....	2
		Military science.....	2
Total.....	42	Total.....	41
JUNIOR YEAR.	Semester-hours.	SENIOR YEAR.	Semester-hours.
Soils.....	5	Economics.....	3
Farm crops.....	5	Economics (rural).....	3
Chemistry (analytical).....	3	Public speaking.....	2
Chemistry (agricultural).....	3	Plant breeding.....	4
Argumentation.....	2	Soils (advanced).....	3
Farm machinery *.....	3	Soil fertility.....	3
Dairying.....	3	Marketing.....	4
Surveying.....	5	Animal nutrition.....	4
Soil mapping *.....	3	Farm management.....	5
Entomology (systematic).....	3	Farm management (advanced) *.....	3
Entomology (economic).....	3	Cost accounting *.....	3
Military drill.....	2	Military drill.....	2
Total.....	40	Total.....	39

AGRICULTURAL COLLEGE OF UTAH.

Students are required to complete the work of the following groups: Major subject, 16 hours; minor subject, 12 hours; biological science, 12 hours; exact science, 24 hours; language (English or foreign), 16 hours; social science, 12 hours; military science, 12 hours; free electives, 28 hours. The following outline has been prepared to meet these requirements and represents the work of a student specializing in agronomy.

FRESHMAN YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SOPHOMORE YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Rhetoric.....	4	4	Modern language.....	6	6
Modern language.....	6	6	Chemistry (organic).....	3	3
Chemistry (inorganic).....	10	12	Geology (economic).....	3	3
Cereal crops.....	3	3	Botany (general).....	8	9
Forage crops.....	3	3	Soils.....	6	6
Military drill.....	2	3	Military drill.....	2	3
Military science.....	2	2	Military science.....	2	2
Elective (free).....	4	4	Elective (free).....	4	4
Total.....	34	38	Total.....	34	37
JUNIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).	SENIOR YEAR.	College credits.	Semester-hours (2-hr. lab. basis).
Marketing.....	6	6	Economics.....	6	6
Physics.....	8	8	Seminar.....	2	2
Bacteriology.....	4	4	Soil bacteriology.....	3	3
Soils (comparative).....	2	2	Economic entomology.....	3	3
Elements of dairying.....	3	3	Plant pathology.....	3	3
Military drill.....	2	3	Elective (free).....	13	15
Military science.....	2	2			
Elective (free).....	7	8			
Total.....	34	37	Total.....	30	33

UNIVERSITY OF VERMONT.

The following represents the work required for the curriculum in animal industry.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester hours.	SOPHOMORE YEAR.	Semester hours.
Trigonometry.....	4	Botany (general).....	8
Analytical geometry.....	4	Zoology (agricultural).....	6
Chemistry (general).....	10	English literature.....	4
Rhetoric and composition.....	4	Soils.....	6
Modern language.....	6	Stock feeding.....	3
Dairying.....	2	Live stock (breeds).....	2
Botany (general).....	4	Olericulture.....	3
Drawing and surveying.....	2	Forestry.....	2
Physical training (gymnastics).....	1	Physical training (gymnastics).....	1
Military science.....	4	Military science.....	4
Total.....	41	Total.....	39
JUNIOR YEAR.	Semester hours.	SENIOR YEAR.	Semester hours.
Anatomy of domestic animals.....	2	Milk production.....	3
Physiology, etc., of domestic animals.....	4	Diseases of domestic animals.....	3
Field crops.....	3	Poultry husbandry.....	6
Farm management.....	3	Farm management.....	3
Bacteriology.....	3	Farm mechanics.....	3
Pomology.....	3	Pomology.....	3
Dairy manufactures.....	3	Rural economics.....	3
Stock judging.....	3	Forging.....	3
General electrical engineering.....	3	Agricultural chemistry*.....	3
Stock breeding.....	3	Commercial law*.....	3
Argumentation.....	3	Economics*.....	3
English literature.....	3		
Total.....	36	Total.....	36



## VIRGINIA POLYTECHNIC INSTITUTE.

The following represents the work required for the curriculum in general agriculture.

- [Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.			SOPHOMORE YEAR.		
	College credits (hours per week).	Semester-hours.		College credits.	Semester-hours.
Rhetoric.....	9	6	Rhetoric.....	9	6
Modern language.....	9	6	Modern language.....	9	6
Algebra.....	6	4	Drainage.....	3	2
Geometry.....	6	4	Farm machinery.....	3	2
Trigonometry.....	6	4	Cost accounting.....	3	2
Physics.....	9	6	Orchard technique.....	7½	2½
Physics laboratory.....	7½	2½	Chemistry (inorganic).....	9	6
Chemistry (inorganic).....	9	6	Qualitative analysis.....	7½	2½
Chemistry laboratory.....	7½	2½	Surveying.....	3	2
Drawing (mechanical).....	7½	2½	Surveying (practical).....	6	2
Drawing (freehand).....	7½	2½	Live stock (breeds).....	6	4
Shopwork.....	15	5	Live stock judging.....	9	3
Military training.....	18	6	Veterinary anatomy, etc.....	6	4
			Horticulture (principal).....	3	2
			Botany (structural).....	6	2
			Botany (systematic).....	6	2
			Farm buildings.....	3	1
			Military training.....	18	6
Total.....	117	57	Total.....	117	57

JUNIOR YEAR.			SENIOR YEAR.		
	College credits (hours per week).	Semester-hours.		College credits.	Semester-hours.
English literature.....	9	6	Economics.....	6	4
Modern language.....	9	6	Farm management.....	3	2
Chemistry (organic).....	9	6	Chemistry (agricultural).....	9	6
Plant pathology.....	6	4	Geology (general).....	6	4
Farm crops.....	3	2	Geology laboratory.....	3	1
Farm crops laboratory.....	9	3	Vegetable physiology.....	3	2
Animal parasites.....	3	2	Genetics.....	6	4
Zoology.....	6	4	Bacteriology (general).....	3	2
Animal breeding.....	6	4	Bacteriology (laboratory).....	15	5
Soil physics.....	3	2	Animal nutrition.....	6	4
Soil physics laboratory.....	6	2	Live stock management.....	3	2
Quantitative analysis.....	9	3	Animal diseases.....	9	6
Entomology.....	9	3	Veterinary clinic.....	9	3
Plant histology.....	6	2	Dairy technology.....	6	2
Dairy products (testing).....	6	2	Butter making.....	6	2
Military training.....	18	6	Cheese making.....	6	2
			Military training.....	18	6
Total.....	117	57	Total.....	117	57

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## STATE COLLEGE OF WASHINGTON.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester-hours.	SOPHOMORE YEAR.	Semester-hours.
Field crops.....	5	Fruit growing.....	2
Livestock (types).....	5	Soil physics.....	4
Rhetoric and composition.....	3	Soil fertility.....	3
English literature.....	3	Farm machinery.....	4
Chemistry (inorganic).....	5	Chemistry (organic).....	5
Chemistry (qualitative).....	5	Bacteriology.....	5
Physics.....	6	Dairying.....	3
Zoology.....	2	Botany (general).....	5
Geology.....	2	Plant pathology.....	3
Library practice.....	1	Rhetoric and composition.....	4
Military drill.....	2	Physical culture.....	1
Physical culture.....	1	Military drill.....	2
Total.....	39½	Total.....	41
JUNIOR YEAR.		SENIOR YEAR.	
Modern language.....	10	Modern language.....	10
Cereal crops.....	3	Economics.....	5
Principles of feeding.....	3	Farm management.....	3
Principles of breeding (plant or animal).....	2	Elective (limited).....	7
Poultry husbandry.....	3	Elective (free).....	11½
Rural economics*.....	5		
Elective (limited).....	9		
Elective (free).....	2		
Total.....	37	Total.....	36½

## WEST VIRGINIA UNIVERSITY.

In addition to the prescribed work, several courses that have been suggested by the major department have been included in the schedule for the junior and senior years.

FRESHMAN YEAR.	University credits.	Semester hours (2-hr. lab. basis).	SOPHOMORE YEAR.	University credits.	Semester hours (2-hr. lab. basis).
Chemistry (organic).....	8	9	Zoology.....	4	4½
Botany (general).....	8	9	Physics.....	8	8
Livestock (breeds).....	3	3½	Live stock (management).....	3	3
Vegetable gardening.....	3	3½	Dairying.....	3	3½
Farm management (elementary).....	1	1	Poultry.....	3	3½
Agriculture (general).....	1	1	Pomology.....	3	3½
Rhetoric and composition.....	6	6	Farm crops.....	4	4½
English literature.....	4	4	Soil fertility.....	4	5
Military science.....	2	4	Entomology.....	4	4½
			Military science.....	2	4
Total.....	36	41	Total.....	38	44
JUNIOR YEAR.			SENIOR YEAR.		
Economics.....	3	3	Sociology.....	4	4
Bacteriology.....	3	3½	Farm management.....	3	3
Chemistry (organic).....	3	3½	Plant breeding*.....	3	3
Farm management.....	3	3	Seminar.....	2	2
History (economic).....	3	3	Soil chemistry*.....	3	3½
Forage crops*.....	3	3½	Soil bacteriology*.....	3	3½
Plant physiology*.....	6	7	Farm machinery*.....	2	2
Entomology (economic)*.....	3	3½	Elective.....	14	16
Grain growing*.....	3	3½			
Soil fertility*.....	2	2			
Elective (free).....	4	4½			
Total.....	36	40	Total.....	34	38

## UNIVERSITY OF WISCONSIN.

The following outline represents the required work for students entering the university without modern language. A separate schedule is offered for those who present modern language upon admission. In addition to the generally prescribed work the schedule presented here includes eight courses to meet the major and minor requirements in the senior year.

[Subjects followed by asterisk (\*) not absolutely required.]

FRESHMAN YEAR.	Semester hours.	SOPHOMORE YEAR.	Semester hours.
English composition.....	6	Chemistry (quantitative).....	3
Modern language.....	8	Chemistry (organic).....	2
Chemistry (general).....	10	Chemistry (agricultural).....	5
Cereals.....	2	Bacteriology (agricultural).....	5
Agricultural engineering.....	2	Botany (general).....	5
Stock judging.....	2	Fruit growing.....	3
Dairying.....	2	Mathematics.....	5
Physical education (gymnastics).....	2	Soils (physics and fertility).....	5
Military drill.....	2	Zoology (general).....	3
		Physical education (gymnastics).....	2
		Military drill.....	2
Total.....	34	Total.....	40

JUNIOR YEAR.	Semester hours.	SENIOR YEAR.	Semester hours.
Botany (economic).....	2	Major:	
Plant physiology.....	4	Plant breeding*.....	3
Live stock management.....	2	Grasses*.....	2
Economics (agricultural).....	5	Cereals*.....	4
Physics.....	6	Agronomy (problems)*.....	1
Elective (limited).....	10	Minor:	
Elective (free).....	5	Land drainage*.....	3
		Soil management*.....	2
		Plant nutrition*.....	3
		Field management*.....	2
		Elective (limited).....	2
		Elective (free).....	9
Total.....	34	Total.....	31

# OUTLINE REQUIREMENTS FOR GRADUATION.

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## UNIVERSITY OF WYOMING.

The following outline shows the distribution of the work of the agronomy and general agriculture curriculum. In the junior year three selected agricultural courses have been included to satisfy the limited elective work.

(Subjects followed by asterisk (\*) not absolutely required.)

FRESHMAN YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).	SOPHOMORE YEAR.	Uni- ver- sity cred- its.	Semes- ter hours (2-hr. lab. basis).
Composition.....	6	6	Chemistry (inorganic).....	8	10
Botany (general).....	10	10	Surveying.....	2	3
Cereal crops.....	3	4	Irrigation.....	2	3
Forage crops.....	3	4	Farm machinery.....	4	6
Algebra.....	3	5	Live stock (breeds).....	6	6
Trigonometry.....	5	5	Bacteriology.....	4	5
Military drill.....	1	3	Animal diseases.....	3	3
			Elective (free).....	2	2
			Military drill.....	1	3
Total.....	33	37	Total.....	32	41
JUNIOR YEAR.			SENIOR YEAR.		
Chemistry (qualitative).....	3	4	Chemistry (organic).....	5	5
Chemistry (quantitative).....	3	4	Chemistry (agricultural).....	4	5
Soils.....	3	4	Farm management.....	2	2
Soil fertility.....	3	4	Plant breeding.....	2	2
Vegetable gardening.....	2	2	Plant histology.....	3	3
Animal feeding.....	5	5	Elective (approved).....	14	16
Plant diseases.....	3	3			
Elective (approved).....	8	9			
Military drill.....	1	3			
Total.....	31	39	Total.....	30	34